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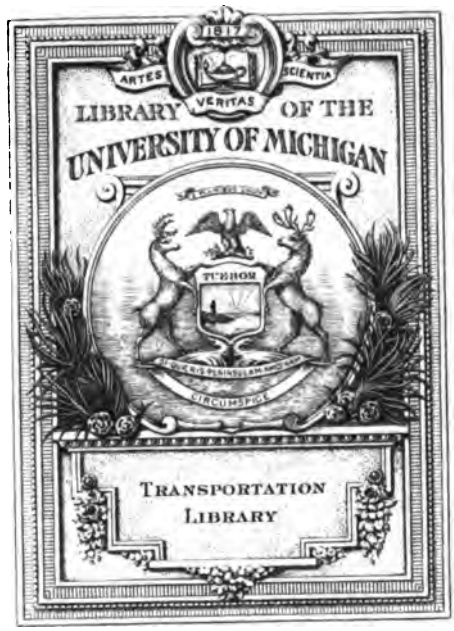
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THE

RAILROADS

OF

THE UNITED STATES:

THEIR EFFECTS

ON FARMING AND PRODUCTION IN THAT COUNTRY AND IN GREAT BRITAIN.

BY

EDWARD ATKINSON.

BOSTON, MASS.:
A. WILLIAMS & CO., PUBLISHERS,
No. 283 Washington Street.

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A Potent Factor

IN THE POLITICS OF THAT COUNTRY AND OF GREAT BRITAIN.

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EDWARD ATKINSON,

BOSTON, MASSACHUSETTS, U.S.A.

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PREFACE.

THIS pamphlet was prepared and printed several months since, but its publication has been delayed until it should have appeared in England in "The Fortnightly Review."

In the mean time several additional tables and other matter have been added in an appendix that might well have been included in the text had they been available at the beginning, in which case the pamphlet would have been in a more connected and better form.

The July number of "The Fortnightly Review" contains the main part of the argument; but most of the tables were omitted, as well as the appendix.

The grave importance of the questions treated cannot be overrated. If the system of landlord and tenant, under which almost the whole of the land of Great Britain has been cultivated, is approaching its end, not only are the incomes of individuals affected, but also those of universities, schools, endowed charities, and of the Church. In fact, it is almost impossible for Americans to conceive the difficulties which must ensue in the adjustment of the conditions of society to the new relations brought into existence by the railroad, the steamship, and the telegraph.

It needed the revolution of 1793 to remedy the wrongs of the people of France, and to change the tenure of land.

It needed four years of civil war to remove the oppression of labor in this country.

Even the small concession of tenant-right in Ireland, which is given in the bill now pending in Parliament, has imperilled the liberal ministry so lately chosen.

What will be the struggle when the land question of England can no longer be deferred? This is the question which the railway system of the United States has brought to an issue.

The present condition of the land of Great Britain is nowhere more fully stated than in a recent work by Mr. Arthur Arnold, M.P., entitled "Free Land." (London: C. Kegan Paul & Co., 1880.)

In the first chapter of this work, under the title of "Who has the

Land?" the "New Domesday Book" of 1874–75 is analyzed; and it appears that out of 72,117,766 acres comprising the total acreage of Great Britain, exclusive of the metropolis, 15,303,165 acres, or a little more than one-fifth, are divided into 1,593 separate landed estates, and are held by 525 dukes, marquises, earls, viscounts, and barons, constituting the House of Peers. These estates have yielded an annual rent of £12,529,068, over $60,000,000. Even this statement, startling as it appears, is believed by Mr. Arnold to be an under-estimate both of the acreage and of the rental, as the estates of peeresses were not included in this compilation, neither were many estates held in special trusts.

It is a matter of interest to an American to consider the sources from which many of the titles to these estates were derived. The record may be found in two very radical volumes entitled "Our Old Nobility," published for the Political Tract Society by E. J. Kibblewhite, London; but the reading of these two volumes may be somewhat prejudicial to a fair consideration of the claims of the present owners. The misuse of many of these estates, and the sources of a large part of the titles, make one wonder how long such an institution as the "old nobility" would stand if it were to be dealt with by the portion of the English-speaking people who dwell in the United States. It is perhaps fortunate that the system out of which such an institution as the old nobility has been evolved, is endeared to the people whom it now oppresses by many ties which it does not enter our minds to conceive, and which even possess almost a ludicrous aspect to us. Every American may not be affected in the same manner as the writer was, in his first walk in a rural district in England, when, on a pleasant Sunday afternoon strolling through the environs of Chester, after he had marked the uninhabited aspect of the country, and had found the people confined in miserable hovels to the picturesque but damp and unwholesome hamlets in which the laborers who till the land now dwell, he came upon a statue erected in honor of the great *landlord* of that section, the Duke of Westminster. Having read the laudatory inscription, he remarked to his companion, that, if he were confined to one of the miserable cottages which served as the only shelter of the people, the inscription would be altered to one that would be the vernacular mode of expressing "*Condemn* the Duke of Westminster!" Doubtless a somewhat unjust thought, in respect to the present holder of the title, but one that could not be avoided.

In the further treatment of the question of land-tenure, Mr. Arnold reaches the conclusion that more than four-fifths of the land of Great Britain is in the possession of about 7,000 persons; but in regard to their title he makes a distinction between *possession* and *ownership*,

in view of the fact that at least 52,000,000 acres of this land are held by those who are only life-tenants under entails or other settlements. Mr. Arnold's words are, "I say, *in possession*, because the landed gentry in this country are not *owners*, in the strict and proper sense of the word, of the lands with which their names and titles are connected."

He contests the view commonly held in this country, that the price of land is very high in England, and that the high price is induced by the social distinction that its possession implies; but holds, on the contrary, that the price of land is far below its true value, and that it pays but a low rate of interest, for the reason that its use and product are restricted by the necessary conditions that must be imposed upon the tenant, in order that the system of landlord and tenant may be sustained at all; that, if it could be freely used in the cultivation of a variety of products, the income would be much greater, and the price would then advance.

It is difficult for any one in this country to imagine such a condition as is pictured by these figures, — four-fifths of the area of a country inhabited by about 33,000,000 people, owned by 7,000 persons, and four-fifths of that portion held only under a life-estate! We hear much of the "family-trees" of those who possess these titles; but, if the tree is to be known by its fruits, we should hardly term them noble. Witness these statements from a chapter on entails and settlements: —

"The nominal owners of several of the finest properties in England are now adjudicated bankrupts: their lands are racked and impoverished; but those broad acres cannot be made free without co-operation of the tenant for life with the next tenant in tail, who in some cases is a minor, and in others is unborn and may never be called into existence. But for every one of the landed gentry who is bankrupt, there are scores who are hopelessly embarrassed. The embarrassment of land-owners is a matter of public importance, because, and mainly because, their lands have, by processes of law, become inextricably involved in their difficulties. All consideration for public interest in the land is denied. The cottages upon many estates are fever-nests, and are few and far between; the homesteads are insufficient, inconvenient, and in many cases they are in ruins; the land is undrained, and there is no one with the interest of a proprietor to look to the estate. The ostensible owner, the lord or the squire of the district, who is harassed for subscriptions, and supposed to contemplate, with the benign interest of a seigniorial lord, the welfare of all around, who is the great man in the church and in the village, is, in the dull reality of his own home, merely a poor annuitant, with eyes fixed, not upon the many fields and farms which in the rate-book bear his name, but upon the slender remnant of income which is all that charges and settlements have left him for the daily and hourly labor of providing for a family for whom ten times his means would seem insufficient."

"The British peasantry is the most immoral in Europe. Any one may see this who compares the statements of the assistant commissioners who were appointed to inquire into the condition of women and children in 1869, with the books of travellers. I have myself seen something of the peasantry of every state in Europe, and I cannot, as I wish I could, assert the superiority of that of Great Britain."

"I regard the thriftlessness of the British peasant as due to his divorce from the soil in every capacity but that of a laborer; and his immorality, in part, to the condition of life to which he is perpetually, and without hope of independence, condemned by the British land system, and in part to the demoralization which is consequent upon the operation of the poor-law and his inevitable retirement to the public poorhouse. Lord Leicester said, in 1871, that the farm-buildings are 'bad' in by far the greatest part of the country. They remain bad; nor are the cottages much improved since Mr. Caird reported that 'the inconvenient, ill-ranged hovels, the rickety wood-and-thatch barns and sheds, devoid of every known improvement for economizing labor, food, and manure, which are to be met with in every county in England, and from which any thing else is exceptional in the southern counties, are a reproach to the landlords in the eyes of all skilful agriculturists who see them. One can hardly believe that such a state of matters is permitted in an old and wealthy country.'"

"'What can the poor life-tenant, especially if his estate is burdened, do towards providing good cottages for his laborers? Nine times out of ten he strives to do his duty, and suffers fully as much as the ill-housed laborers on his estate.' Mr. Fraser (now Bishop of Manchester) reported to the same effect. He said, 'Modesty must be an unknown virtue, decency an unimaginable thing, where, in one small chamber, with the beds lying as thickly as they can be packed, father, mother, young men, lads, grown and growing-up girls, are herded promiscuously; where every operation of the toilet and of nature — dressings, undressings, births, deaths — is performed by each within the sight or hearing of all; where children of both sexes, to as high an age as twelve or fourteen, or more, occupy the same bed; where the whole atmosphere is sensual, and human nature is degraded into something below the level of the swine. It is a hideous picture; and the picture is drawn from life.'"

Such is some of the testimony adduced in support of the demand for a reform of the laws relating to the tenure of land.

The longer legislative abuses or obstructions are maintained, the more severe must be the struggle for their removal. Yet when the time comes they must yield because the further attempt to maintain them means war or anarchy. Witness the condition of Ireland at this very time.

Let the bitter struggle through which England passed in the great contest over the corn-laws be remembered; let it be considered that the power of the House of Lords and of the Established Church is founded mainly on the possession of, and the rent of, land; further, that the very existence of the present system depends absolutely upon

a body of trained tenant-farmers, whose capital has been invested in these lands, which capital has been or is now being destroyed by a series of bad seasons and by our competition; that without these tenant-farmers the possessors of the soil are as powerless to use land as they now are to dispose of it; and then the true meaning of wheat at forty shillings a quarter, and beef at sixpence a pound, will be apparent, if it be true that these prices will continue to be profitable to us, and yet forbid any rent being paid upon land devoted to their production in England.

It may be as true of the economic as of the spiritual gospel, that it brings not peace, but a sword. It cuts away abuses, that in their fall will promote much misery before the righteous conclusion is attained.

No return to the protection of agriculture can be considered for a moment: the rent of land is but a tithe of the income of the people, and cheap food is vital to the very existence of the vast majority who are engaged in manufactures, in commerce, and in the mechanic arts.

It may well befit us who are spared the distress which must ensue before this revolution on which Great Britain is now entering is ended, to remember that we are members one of another, bound by the interdependence of nations, and that upon the welfare of England our prosperity greatly depends, because she is our principal customer.

As the fall of slavery brought misery on both North and South here, so must the fall of privilege work sadness over the sea.

The ruling classes of Great Britain would have sustained slavery had they dared, and would have rejoiced over the disunion of this nation. Through centuries of privilege, if not of acknowledged oppression, they have held the tillers of the soil in a bondage that differed only in name from the crime which this nation committed, and for which it suffered. They were wise in their day and generation in their sympathy with disunion. It is because we have nought to fear from foreign foes, are now free from the blood-tax of a standing army, and are united in the bonds of common interest, that we have been free in these last few years to load the ships with corn and meat and cotton by which the people of England who were our friends in time of need have been sustained, while those who would have kept us and them in bondage are being brought to a condition in which they must render service instead of receiving it, or yield their possessions to those who will use them for the benefit of all.

Since the text of this pamphlet was printed, Poor's Railroad Manual has been issued, by which it appears that the number of miles of new railroad constructed in the United States in 1879 was 4,721, making the total number of miles in use Jan. 1, 1880, 86,497.

The following tables, taken from the preface of the manual, will be found to sustain the position of the writer.

"As was noted in the Manual for 1879, the most marked feature in connection with the increase of earnings continues to be the reduction in freight-charges which has been taking place on all our leading railroads for several years, and in no year more notably than in that which has just closed. Only an extraordinary increase in tonnage moved would enable the railroads to continue such reductions, of which the public reap by far the largest reward. To show the changes that have been made in these respects during the last seven years, we have compiled the following table, commencing with the year 1873, that of the greatest prosperity in railroads prior to 1879:—

Table showing Amount of Freight moved, Earnings from Freight, and Rate of Charge per Ton per Mile on the Railroads named, in the Years 1873 and 1879.

Line of Road.	Tons of Freight Moved.		Receipts from Freight.		Rate per Ton per Mile (cts.)		Miles of Railroad.	
	1873.	1879.	1873.	1879.	1873.	1879.	1873.	1879.
Boston and Albany.	2,884,520	2,738,096	$6,221,184	$3,588,839	1.96	1.10	293	322
N. Y. C. and H. R. .	5,512,124	9,015,753	19,616,018	18,270,250	1.57	0.81	858	1,018
N. Y., L. E., and W.	6,312,702	8,212,641	15,015,808	12,233,481	1.45	0.78	950	928
Pennsylvania . . .	9,211,234	13,684,041	19,608,555	17,017,089	1.41	0.79	860	1,002
P., F. W., and C. .	2,316,568	3,679,382	6,716,399	6,066,593	1.41	0.76	468	468
L. S. and M. S. . .	5,176,661	7,541,294	14,192,309	11,283,261	1.33	0.64	1,154	1,177
Michigan Central .	2,186,786	3,513,819	4,918,962	4,986,988	1.22	0.69	801	804
Chicago and Alton .	1,642,443	2,634,177	3,897,462	4,242,791	2.12	1.05	649	787
C., B., and Q. . . .	2,221,744	4,686,520	8,035,349	11,650,623	1.92	1.02	1,236	1,783
C., M., and St. Paul,	1,791,504	2,559,734	6,421,369	6,850,755	2.49	1.72	1,399	1,996
C. and N. W. . . .	2,958,390	4,265,037	8,614,260	9,924,030	2.35	1.56	1,382	1,616
C., R. I., and P. . .	1,280,966	2,256,670	4,597,982	6,929,926	2.29	1.43	674	1,125
Illinois Central . .	2,057,360	2,324,485	4,148,901	3,262,526	1.51	0.97	705	705
	45,557,002	67,092,549	112,004,648	116,311,452	av. 1.77	av. 1.02	11,438	13,821

"It is to be regretted that the reports of the Baltimore and Ohio Railroad are not so kept as to enable us to make a comparison of all the trunk lines.

"It will be seen by the above that while there has been an increase in freight moved of 47.27 per cent, and in miles of road operated of 20.83 per cent, the increase in earnings from that source has been only 3.84 per cent. Freight is now moved at a rate per ton per mile which would five years ago have been regarded as impossible. The percentage of decrease has been 42.31 per cent, — nearly equal to the increase in tons of freight moved. Fortunately for the country there has been during the past year an unusual freedom from adverse legislation tending to regulate the operations of our railroads, and as a consequence the companies have been left free to work out the problem of cheap transportation, governed only by the inevitable laws of trade. The reduction in rates during the year just closed is, therefore, greater than in any one year before, except among a few of the trunk lines during what was known as the war of rates in 1875-76.

"The rates per ton per mile for 1878 and 1879 were as follows:—

	1878.	1879.	Decrease.		1878.	1879.	Decrease.
Boston and Albany . .	1.13	1.10	.03	C., B., and Q.	–	1.02	–
N. Y. C. and H. R. . .	0.93	0.81	.12	C., M., and St. Paul . .	1.80	1.72	.08
N. Y., L. E., and W. . .	0.97	0.78	.19	C. and N. W.	1.73	1.56	.17
Pennsylvania	0.92	0.79	.13	C., R. I., and P.	1.56	1.43	.13
P., F. W., and C. . . .	0.88	0.76	.12	Illinois Central	1.03	0.97	.06
L. S. and M. S.	0.73	0.64	.09				
Michigan Central . . .	0.85	0.69	.16	Average	1.15	1.02	.13
Chicago and Alton . . .	1.30	1.05	.25				

"The freight earnings of the roads given in the above table were in 1873 about one-third of those of all the railroads in the United States, and in 1879 about one-fourth. Had the rates of 1873 been maintained in 1879, the receipts for the latter year, instead of being as now, would have reached on the roads named the sum of $230,618,838, and for the United States, $922,475,352. The difference between the amount actually received and that given above shows what has been gained by the public in the operations of our railroads alone. In no other branch of commerce can any thing like this saving be shown. It is the result of intelligence, skill, and ingenuity, left free to work out the best possible results, unhampered by other legislation than that of their own officers, composing a legislature in constant session."

E. A.

BOSTON, July, 1880.

THE RAILROADS OF THE UNITED STATES

A POTENT FACTOR IN THE POLITICS OF THAT COUNTRY AND OF GREAT BRITAIN.

In the report of one of the recent speeches of Mr. Gladstone, reference is made to information sent him by an English correspondent in this country in regard to the prices of certain farmlands in Massachusetts, by which it appears that he has been misled in his inference that Western competition has depressed Eastern farming in the United States; his correspondent having formed a general conclusion upon very insufficient data.

As a right understanding of the true effects and results of Western competition in the production of grain and meat may become of the greatest importance in the settlement of the grave questions in reference to land-tenure now pending in Great Britain, it may not be unsuitable for an American to submit some considerations on the great changes that have in fact been brought about in the Eastern United States by the construction of railroads to the West, to which as yet public attention has not been much directed even there.

The object of this paper is to prove, —

1. The vast saving in labor that has been effected in the eastern portion of the United States by the extension of the railway system to the West in procuring bread and meat at less and less cost.

2. That the art of agriculture in the Eastern States has in recent years made a great advance in respect to method of work and in variety of products: in some sections of the Eastern States there has also been a considerable increase in the value of agricultural products, such progress having been promoted and made possible by the changed relations of the two sections of the country growing out of the railway system.

3. That, under the unrestricted action of natural laws, like effects will be produced in Great Britain.

4. That, under the working of the new force represented by the modern railway system and the steamship, the present relations of landlord and tenant peculiar to Great Britain must and will be so entirely changed as to result practically in the almost entire disappearance or abatement of the element of rent in respect to land devoted to purposes of agriculture.

5. That, in place of the present division of agricultural produce or its value among three classes — laborers, tenants, and landlords — in the proportion of the minimum needed for subsistence to the first, an uncertain and at present negative quantity to the second, and a maximum to the third, — a new division of an increased, varied, and more valuable product will occur between two classes, laborers and freehold farmers.

6. That, in this new division, the same facts will be observed that are found in other occupations; to wit, that, as the product increases in variety and in value, a larger share and a better subsistence accrue to each of the two classes, laborers and employers, wherever distribution is unaffected by restrictive statutes.

In pursuance of this subject, in respect to the eastern part of the United States, Massachusetts, on the whole one of the most sterile States, will be chosen as an example.[1]

It is admitted that there are many deserted farms in Massachusetts; that the rural population has not increased, but has in many places decreased; and that there is much land, once under cultivation, that would not now bring the cost of the stone walls with which it is enclosed.

But these farms are in the more sterile sections of the State, or are remote from railroads, and have been given up because improvement in agriculture compasses larger product on less land with less labor elsewhere, even in the same State.

[1] Massachusetts is a small State, only 7,800 square miles in area. Her typical natural products are commonly said to be granite and ice. Her people, about one-fourth of whom are foreign-born, are mainly engaged in the manufacturing and mechanic arts of every kind; but in 1875 there were in the State 44,549 separate farms, of which only 1,054 were held under leases, 43,495 being carried on by their owners. They contained 3,402,000 acres of land, valued, with buildings, at $182,600,000, at an average of $4,100 each. Not quite one-third of the land is under cultivation. The total amount of wages paid for hired labor was $5,600,000. The value of the domestic and agricultural product of these farms in 1875 was $41,522,000. — *Vide Census of Mass.*, 1875, CARROLL D. WRIGHT, *Supt.*

There is another class of farms of an intermediate kind, that have been sold by their original Yankee owners because their descendants did not find scope for their ability upon them: they needed a larger field and a greater opportunity. These farms have been taken up in very many cases by Irish, many of whom have passed from the textile factories or other occupations to the ownership of land purchased with the savings which the universal custom of depositing in savings banks (especially among the Irish in New England) has enabled them to accumulate. Their places in the textile factories, boot and shoe factories, and the like, have been mainly filled by the French Canadians, who formerly came down from Canada to remain a few years, saved a little money, and then returned to Canada; but who now remain in New England because their children, partially educated in our public schools, could not be contented in the cold climate, and want of varied occupation, which exist in Lower Canada. Many returned to Canada during the war, but have now come back to New England to stay.

Yet, despite all this giving up of farm-land formerly cultivated, and this change of ownership, the more fertile lands of Massachusetts are now worth more, because more productive, than they were when we were much more dependent upon our own labor for grain and meat of home production than we now are. The aggregate value of the farm-products of Massachusetts increases annually. Between 1865 and 1875 the cost of moving Western farm-products to Massachusetts was reduced in greater ratio than at any previous period; yet the value of the agricultural products of the State was nearly eight million dollars more in the latter than in the former year, notwithstanding the very great reduction in prices which accompanied the appreciation of the paper dollar, from an average discount of thirty-six per cent in 1865 to only ten per cent in 1875.

Before the use of the railway, and even down to a later date, — before the great railway systems of the country were consolidated, and worked at the low rates that now prevail, — it was necessary for the people of New England to work arduously for bread alone. Brown bread made of Indian corn constituted the staple food in many farmers' families; white or wheat bread was a luxury.

The use of fresh meat was much less than it is now; and,

when a "beef-critter" was killed, the neighborhood was notified, and special arrangements were made for the sale and distribution of the meat. It was also the custom in small neighborhoods that the killing of animals should be arranged in order, so that there might be a regular system in the distribution of the meat. Eggs and milk were abundant, because the means of distribution were very limited.

There are, within twenty miles of Boston, hundreds of acres of land which, half a century since, would of necessity have been devoted to the production of grain and potatoes, of which the gross product per acre is now worth five hundred or a thousand dollars a year. Nothing strikes a New-England man with more amazement, on the first approach to London, than to see the proximity of the wheat-fields to the suburbs of the city, where he would expect to find very small farms under high cultivation in market-gardening.

Again: it is but a few years since a wood-lot was as essential to the farm as the corn-field or the pasture. New England possesses no available beds of coal, and the whole supply of fuel came from the forest. It could not be moved long distances, and the farmer was obliged to go to the forest or to its proximity, since the forest could not come to him.

The hillsides were cleared, and great temporary injury was done; but at the present time the anthracite coal of Pennsylvania furnishes the cheapest fuel in very remote parts of the New-England States. The forest is being restored on the hills; and many farms, which were only occupied because the supply of fuel was ample, may now be left for pasture, or even may be covered with wood on the arable land. In many cases this "sprout-land," so called, retains its value for the supply of railway-sleepers and other purposes.

The same rule of increased product and value applies to most of the farm-lands of Central New York in and around the Mohawk and Genesee valleys, formerly the very centre of the best wheat-cultivation of the United States, but where but a moderate quantity of wheat is now raised. These farms, temporarily affected in value by the competition of Western grain, are now in many places more valuable than ever before; and, as the mode of cultivation and the character of the crops become adjusted to the new conditions, a higher degree of prosperity ensues.

There is still a considerable quantity of maize, or Indian corn, produced in New England, because the varieties grown on our soil and in our climate are harder, sweeter, and more nutritious than the kinds raised upon the prairies of the West; but, on the whole, it may be said that maize and wheat are the *pioneer* crops, of easiest cultivation in this country, and not — as wheat is in Great Britain — the product of high farming under a system of cultivation carefully prescribed in the lease of the land.

Thus it happens, that, although these crops have passed more and more to the West, their migration does not mark decay, but rather progress, in the art of agriculture in the East. Since we can get the staple elements of subsistence from what may be called the great *manufactories* of grain and meat in the West, our own farmers are engaged in producing roots, hay, and fruits in great abundance, in raising poultry, or in dairy-farming. In witness of this statement, the data of the last national census (which were quite inadequate in respect to the products of agriculture of Massachusetts) disclosed the fact that Worcester County, Massachusetts, stood only third among the county divisions of the whole country in the value of the products of agriculture. The first was Lancaster County, Pennsylvania; the second, the great dairy-county of St. Lawrence, New York; the fourth was Hartford County, Connecticut; not until the fifth did we reach the corn-country, La Salle County, Illinois; sixth, the wheat-country, Oakland County, Michigan; and next we come back to Burlington County, in New Jersey.

In 1870 the value of the products of agriculture of the five counties of Lancaster, Penn., St. Lawrence, N.Y., Worcester, Mass., Hartford, Conn., and Burlington, N.J., — all situated in the far East, — was $38,804,240. Yet the area of improved land on which this value was produced was only 3,058 square miles, — an area that would be graphically represented on the scale of the chart, that will be found further on, by this square: ■

The value of the farms of these five Eastern counties, represented by this square, was, in 1870, $182,786,611. The value of all the improved lands in the great corn State of Illinois was only five times as great; the value of all the farms in the great wheat State of Minnesota, a little more than one-half

as much; and in the great cotton State of Mississippi, less than one-half.

It is true that a great period of depression has occurred since 1870, which has affected the East a little more than the West; but it has passed by, and it cannot now be gainsaid that, although we have not in the East any great workers of hundreds and thousands of acres, who make corn or maize and wheat by machinery, there are yet more thrifty, prosperous farmers who own and cultivate moderate quantities of land in New England and the Middle States than there are in the Western States; the reason, of course, being that the more dense population of the towns and cities of the East, engaged in commerce or in the manufacturing and mechanic arts, affords a quicker market for the variety of products that cannot be moved over very long distances, but which constitute a far greater proportion of the cost and also of the comfort of household consumption than is represented by the mere consumption of bread. It is not intended to affirm that there are not many richer men engaged in agriculture in the West than in the East, — men who have grown rich both by farming on a large scale, and by the rise in the value of their land; but in proportion to numbers it is very certain that there is a higher standard of comfort and thrift in many of the farming counties of New York, New Jersey, and Pennsylvania, and in portions of New England, than prevails at the present time in the Western States.

The same changes in variety and value of products will occur, or have doubtless occurred, in the neighborhood of the great Western towns and cities which are so rapidly becoming the centres of various manufactures; and they have also occurred in the vicinity of Southern seaboard cities, — Charleston, Savannah, and Norfolk, — where thousands of acres of land are devoted to market-gardening for Northern supply, and are witnesses of the industry and thrift of the free colored laborers by whom most of the work is done; even long distance being offset by the high prices obtained for early vegetables and fruits.

The same rule seems to apply to these great staple and necessary products of agriculture — corn and meat — that applies to staple textile fabrics and to other factory-work; namely, that, as they become more and more the product of machinery, employing relatively but few hands, they find their special place or

district, and the work of that district is concentrated upon them. An ever-increasing proportion of the population elsewhere is thus relieved from arduous drudgery, and is enabled to spend more time and work on the comforts and luxuries of life, and in more varied occupations.

Machinery not only aggregates people in manufactories of fabrics, but also in districts devoted to wheat and to grazing; but it segregates as well by enabling great numbers of men to do other work, requiring manual dexterity rather than machinery, for which there would otherwise be no time or opportunity, and which may be carried on wherever men choose to live in communities of moderate size.

It will be observed that a law seems to obtain, that the larger the factory the less the relative number of persons employed in it. When cotton-factories were first built, a mill of five thousand spindles was a very large one, and one operative averaged about three yards of sheeting per hour.[1]

At the present date our factories range from twenty thousand to one hundred and fifty thousand spindles under one roof, and each operative makes over ten yards of sheeting per hour.

The application of machinery to the staple products of maize and wheat is producing the same result, — less human labor, and more food to be consumed. In this essay maize and pork may be considered synonymous terms, the "hog-products" being the conversion of maize into meat.

The secret of these changes in the sources of our agricultural supplies is, that the railroad has eliminated distance. A barrel of flour, and a barrel of pork or its equivalent, constitute the substance of Western farm-products needed by each adult in the East. The two barrels are equal to five hundred pounds, or a quarter of the net ton in which our railway-traffic is computed. This quantity is now brought from Chicago to Boston one thousand miles, at an average of one dollar and a quarter; sometimes for less, or at the rate of five dollars, or one pound sterling, per ton of two thousand pounds.

[1] The importance of the railway to the West in the economy of Eastern manufactures may be well proved by selecting the operative in a Massachusetts cotton-factory as an example. The gross annual value of the product of one factory operative working on coarse and medium cotton fabrics is now $1,600 to $2,000. The cost of moving all the Western meat and flour that such an operative will eat in a year, from Chicago to Lowell, — about one thousand miles, — does not exceed one dollar and a half, or a trifle over six shillings, and is often less.

We might therefore state an economic equation in these terms: —

The movement of one year's subsistence of grain and meat for an adult working-man a distance of one thousand miles is equal to a dollar and twenty-five cents, or five shillings, which sum is equal to one day's wages of a common workman or half the daily wages of a good carpenter or mason.

Half to one day's wages, one thousand miles, and the movement of one year's subsistence, are synonymous terms. One day's pay places the mechanic of Massachusetts next door to the Western prairies a thousand miles away.

The same terms of the equation may soon be applied to the distances beyond Chicago toward Minnesota, Dakota, Iowa, Kansas, and Nebraska, because grades are easier, fuel is more abundant, and, as population and traffic increase, *two* days' work of a common laborer in Massachusetts will soon move a year's subsistence of corn and meat fifteen hundred or two thousand miles, from far Dakota and from the plains of Nebraska; one name still designating a Territory, the other the last but one among the States admitted to the Union. At the present time the rates of freight west of Chicago are much higher than between Chicago and the seaboard.

In Dakota, on the Red River of the North, wheat is *manufactured* in some fields, where each single furrow of the plough is said to take a day to run without once turning; and from these fields the wheat is now brought in millions of bushels, upon which there has been no manual labor, except to direct the machinery, from the time the seed was planted in the field until the bread is cut upon the table of the factory operative in Lowell.

As Daniel Webster once replied to the objection made to the importation of the product of pauper labor from abroad, "We cannot afford to do for ourselves what foreign paupers can do so well for us," so we may now say in the East, that we cannot afford to work with our hands on crops which Western farm-machinery can produce so cheaply for us. This mechanism can only be applied with economy on a large scale, and where the soil is in a very comminuted condition, free from loose stones, boulders, ledges, or stumps of trees.

Such is the character of the prairie-soil, — in fact, of the arable land extending east and west from Central Ohio to Colorado, and north and south from Manitoba to Mississippi; this whole

valley of the Mississippi and its tributaries now being assigned by some geologists to the loess formation.[1]

Such having been the changes that the railroad has worked in the East in enabling us to spare our labor from that which used to be our most arduous work, and apply it to occupations which give us more comfort, more wealth, and more prosperity; and since the railroad can be worked profitably at much less than one cent, or a half-penny, a ton per mile, and on these bulky products of corn and meat at half a cent, or one farthing, per ton per mile, — it may now be asked, what is to be the permanent effect of the steamship in enlarging the area of cheap transportation on the English production of corn and meat? In California the rains last only four months; in that State and in Colorado, by irrigation, crops of wheat are made exceeding the English average product per acre. Elsewhere our average crop per acre may not be over one-half or three-fifths; but the area on which this production is possible is subject to no limit for many generations.

An American observer may not pronounce dogmatically upon the possible effect of the competition between those lands and the wheat-fields of Great Britain. But it may be asked,

[1] "I never contemplate the great maps of the United States which hang in this hall, or consider the natural resources of this broad continent, without a deep feeling of wonder, love, and praise. The soils, their character, chemistry, origin, and value, form a vast theme of themselves, of which time will only permit me to give a single illustration. In Europe, in the fertile valley of the Rhine, and in China, in the great Yellow-river Valley, and again in our own Mississippi Basin, there is a geological formation called the loess, which is as wonderful as it is almost entirely unknown, even to the intelligent members of this house. This formation has the marvellous property of fertilizing itself forever, by drawing upward from the deeper sources of fertility all the elements which are required for the perennial nourishment of the cereal crops. In China an area of about two hundred and fifty thousand square miles of this loess formation has for the last three hundred years supported a population of not less than one hundred and fifty million human beings, which is about one person to the acre; and this is the explanation of the amazing capacity of China to support the dense population which she is known to possess.

"The area, depth, and nature of our own vast loess field, which covers a considerable part of the grain-region of the West, are perhaps the most important factors in the prosperous growth of America for centuries to come. How extensive, how deep, may be our American loess formation, and where are its boundaries, can only be determined by a thorough geological survey. That it is in Louisiana and Dakota gives some idea of the extent of the problem, and opens up visions of the vast population which will at some future day exist upon our soil, and shows how transitory and how needless are the troubles which now embarrass the condition of the laboring population of this country." — *Our National Inheritance, and how to enjoy it: Speech of Hon. Abram S. Hewitt in the House of Representatives Feb.* 11, 1879.

Can any system of high farming under restrictions compete with these conditions? Can any land, subject to any rent whatever, compete in the production of wheat and meat with these conditions of unlimited areas of land at a cost of two to three dollars, or eight to twelve shillings, an acre, and rates of transportation at half a cent a ton, or one farthing per ton, per mile of rail, when the steamship continues the transportation at a less and less charge as improvements continue to be made in the construction and running of the ships?

Can any rented land, subject as it must be to special conditions in the leases as to the rotation of crops, the amount of stock to be kept, and other restrictions necessary to maintain it in condition, compete with these vast areas free from all restriction?

As time goes on, must not English farming adjust itself in the same manner that Eastern farming has adjusted itself to these new conditions? that is, to the variety of products that will not bear long carriage, and that require more and more the individual ownership of small farms, free from onerous rents, and from the more obnoxious conditions of leases and settlements.

May not these conditions inure in the long run, and after the settlement of the temporary difficulties of land-tenure now pressing upon Great Britain, as they have here, to greater general prosperity and abundance, and to far greater variety of food at less and less cost to the consumer? Such having been the results without question in the United States, especially in respect to the changes in the older sections of the East, must not the same causes inevitably work the same results across the sea? If these points are well taken, we may now be witnessing not the decadence of the agriculture of Great Britain, but the very beginning of its true progress, and the opening of an upward movement among the agricultural population to greater welfare and prosperity.

If the competition of Western grain and meat renders the present system of leasing and working land in Great Britain absolutely and permanently unprofitable, and that system cannot be applied to the greater variety of methods of cultivation and of crops that have succeeded wheat-culture in the East, then the interest of both land-owner and tenant will coincide in making the changes required, no matter what the sacrifice of social position may be that is involved in the change. The ownership of land without income will not give much distinc-

tion. When these changes are complete, the time may perhaps come when simple printed forms of deeds and rules of registration will enable the town-clerks, justices of the peace, or other intelligent persons, to do all the work of the conveyancer as they now do in most of the country-towns of New England.

In the first half-century after the settlement of Plymouth Colony, the title to land passed by declaration before the governor or one of his assistants, duly recorded, without the execution of any written deed whatever, and without the signature of the vendor being required. Many of these deeds are in the simplest possible form of description, and are entirely free from legal technicalities. At the present time the written deed of land possesses little importance after the record is made.

It will be obvious that this adjustment to the new conditions brought into force by the railroad could not have been made without very great difficulty in the eastern parts of the United States, had there been any system of landlord and tenant as to farm-lands. Had not the purchase, sale, and division of lands been free, the examination of title easy and cheap, and the registration of deeds effective in every county, and had we not been absolutely free from the encumbrances of entails and settlements, we should have been subjected to as great difficulties as are now being met in Great Britain and Ireland.

It may be broadly stated, that the adjustment of production to changing conditions, brought into action by science and invention in the United States, has been made possible by the free conditions, not only in the sale, but in the use, of land throughout the country.

The modern cheese-factory is an example of an invention requiring absolute freedom in the use of land. If it were made incumbent on the farmer to feed the refuse of cheese-making to stock upon the land on which the stock fed, the cheese-factory would not be practicable. The farmer must sell his milk, and restore his land in his own way. Absolute freedom in use is as necessary as freedom in purchase and sale.

In respect to wheat, it would be very desirable to be able to treat the subject of the actual cost of production, in order to state the exact terms of the competition between this country and Great Britain. Several attempts have been made to ascertain the exact cost of production on the field, but it is as difficult as it is to ascertain the cost of raising

cotton. Some of the elements may be stated with sufficient accuracy for the purpose of the present investigation. Let us consider an extreme case, — the wheat produced in the Territory of Dakota, from which point it is now brought in very large quantity, and where some of the furrows are said to be a day's journey in length. The soil is in the finest condition, very deep, full of phosphate, lime, and potash, and has been fertilized by myriads of buffalo roaming over it for ages. Estimates of the cost of raising wheat on these "bonanza farms," so called, vary from thirty-seven to fifty cents a bushel, — or from twelve shillings and four pence to sixteen shillings and eight pence per quarter.

Within the limits of the land-grant of the Northern Pacific Railroad in that section are wheat-lands of the very best quality, far more than equal to the area of all the land under cultivation in Great Britain and Ireland. The bonds of the Northern Pacific Railroad (which road failed in 1873, but is now appearing to prosper again) are convertible into these lands, and can be purchased at such prices that the land will not cost the buyer more than two to three dollars per acre. The great farms now under cultivation cost the owners but a trifle, as they were bought with bonds purchased immediately after the panic, at a few cents on the dollar. The average product of wheat is twenty to twenty-five bushels per acre.

The intermediate sections of government land can be bought at one dollar and twenty-five cents to two dollars and fifty cents per acre, and are open to actual settlers under the homestead law without cost.

The cultivation is all done by machinery; and the grain-binder, invented and applied within two or three years, has done away with the last element of manual labor.

It does not seem probable, to say the least, that any other method of cultivation can possibly compete with this; although it is possible that even this section will be excelled in cheapness of production on the irrigated wheat-*manufactories* of Colorado, and in California on lands that are rainless during the harvest-season.

It is perfectly safe to assume that the production of wheat in this section will increase so long as it brings half a dollar, or two shillings sterling, per bushel.

How entirely undetermined the cost of transporting wheat

from the Red River of the North, in Dakota, to Liverpool, now is, will be seen by the following statement: —

The distance may be divided substantially as follows in round figures: —

	MILES.
From Dakota to Chicago	650 to 900
From Chicago to New York or Boston	950 to 1,000
Boston or New York to Liverpool, about	3,000

Within a year the rates of freight between Chicago and the seaboard have varied from three to seven dollars per ton of two thousand pounds.

From the seaboard to Liverpool, from three pence to eight and one-half pence per bushel, or from two dollars to five dollars and sixty-six cents per ton.

The rate on wheat from Dakota to New York has been from fourteen dollars to sixteen dollars and one-half per ton. It will thus appear that the charge on the railroad beyond Chicago for an average of about seven hundred miles has been nine to ten dollars per ton: therefore, if the traffic this side of Chicago can be carried on at the price of the last year or two, there is a margin for reduction on the distance beyond Chicago to Dakota of four to six dollars per ton whenever the railway service in that direction is consolidated and worked as effectively on that side of Chicago as it is on this side.[1]

On the whole, it may be said that the charge for moving wheat from the Red River of the North to Liverpool has varied during the past season from seventeen to twenty-two dollars per ton of two thousand pounds, and that there is reason to expect such improvement that the average rate will be sixteen to twenty dollars, or forty-eight to sixty cents per bushel.

Whatever the wheat brings in Liverpool above this charge

[1] NEW YORK, Feb. 25, 1880,
33 WHITEHALL STREET, ROOMS 23, 24.

MR. EDWARD ATKINSON.

My dear Sir, — Your favor of the 23d inst. received. The rate of freight all rail from Dakota to New York is eighty cents per one hundred pounds, or sixteen dollars per ton, on grain. Dakota grows a fine quality of spring wheat, heavy plump berry, color dark, gluten predominating more largely than in the Iowa and Minnesota spring wheat. It inspects No. 2, but really in quality and flour-producing qualities is not spring. Three or four years ago, the Dakota wheat came to the seaboard by rail; but the Minnesota millers for the last three or four years have placed their agents along the line of the Southern Dakota Railway, and have been about the sole purchasers of Dakota wheat, on account of its superior flour-producing qualities, it being so prolific of gluten as to make a very

and the charge for commissions, insurance, and incidental expenses, constitutes the remuneration of the wheat-manufacturer of Dakota.

These figures are sufficiently accurate for an approximate estimate, and the wheat-cultivation of Dakota increases rapidly under these conditions.

The following statement of the acreage in wheat in Great Britain, from "The Edinburgh Review" of January, 1880, gives some interesting data for comparison between Dakota and Great Britain: —

"The results of the wheat-crops for the last nine years are given in

strong and superior quality of bakers' flour. I send you average rates of lake and canal freights, Chicago to New York, monthly, for the year 1879.

Yours truly,

E. H. WALKER,
Statistician, New-York Produce Exchange.

To Edward Atkinson, Boston, Mass.

Average Lake and Canal Freights Monthly for the Navigation Season of 1879.

MONTHS.	Lake Freights — Chicago to Buffalo.				Canal Freights[1] — Buffalo to New York.				Total Freights — Chicago to New York.			
	Wheat, 60 pounds.		Corn, 56 pounds.		Wheat, 60 pounds.		Corn, 56 pounds.		Wheat, 60 pounds.		Corn, 56 pounds.	
	c.	m. f.	c.	m. f.	c.	m. f.	c.	m. f.	c.	m. f.	c.	m. f.
May	3	1 2	2	6 9	4	6 6	4	1 8	7	7 8	1	8 7
June	2	0 6	1	8 3	4	1 7	3	6 2	6	2 3	5	4 5
July	2	9 5	2	5 1	5	2 9	4	7 7	8	2 4	7	2 8
August	5	1 4	4	5 9	6	5 6	5	9 6	11	7 0	10	5 5
September	5	3 8	4	8 4	8	0 8	7	3 1	13	4 6	12	1 5
October	7	7 9	7	1 2	8	9 3	8	1 5	16	7 2	15	2 7
November	6	7 5	6	3 5	10	3 4	9	0 7	17	0 9	15	4 2
Average 7 months	4	7 4	4	2 7	6	8 6	6	1 7	11	6 0	10	4 3
Per ton 2,000 pounds average	$1	5 8	$1	5 2½	$2	2 8½	$2	2 0	$3	8 7	$3	4 8

[1] Tolls included.

You will observe that the lake and canal rates during May and June were very low, much more so than during July to November. The reason of this was the low rail rates, which opened in January, running into February, 1879, at seven to eight dollars per ton from Chicago to New York. They were reduced in March, then again in April, and again in May; and during May and June grain was carried from Chicago to New York at one dollar and fifty cents per ton and two dollars; which, taking out the fifty cents lighterage here, before pro-rating with the different roads, made the actual freight by rail one dollar and one dollar and a half per ton, and to Philadelphia and Baltimore forty and sixty cents per ton less. The average rate by water from Chicago to New York in May was $2.59 per ton, and in June $2.08 per ton, on wheat. The pooling arrangement was entered into about July; and then with a large new crop of grain to move, with enough business for all routes, rail and water, the rates were more uniform, and paid a more reasonable compensation for the service.

E. H. WALKER.

the following table, for which we are mainly indebted to a 'Statist's' interesting letter to 'The Times' (July 14, 1879). We have added an estimate of the last crop, which is necessarily of a somewhat speculative character. The last column, which gives the farmer's gross returns in money for an acre of wheat, is arrived at by multiplying the price in column 4 by the yield in column 3. The second column is taken from Mr. Caird's 'Landed Interest:' —

	Area of United Kingdom under Wheat-Crops.	Average Production per Acre as compared with standard of 100.	Production of Wheat per Acre.	Average Price per Quarter during 12 months preceding harvest.	Average Gross Produce for Wheat, represented in Money excluding value of Straw.
	Acres.		Qrs.	*s.* *d.*	£ *s.* *d.*
1871 . . .	3,831,000	90	3.2	56 7	9 1 1
1872 . . .	3,840,000	92	3.2	57 3	9 3 2
1873 . . .	3,670,000	80	2.8	61 3	8 11 6
1874 . . .	3,833,000	106	3.7	44 7	8 4 11
1875 . . .	3,514,000	78	2.7	46 9	6 4 2
1876 . . .	3,124,000	76	2.7	54 8	7 7 7
1877 . . .	3,321,000	74	2.6	50 10	6 12 2
1878 . . .	3,382,000	108	3.8	40 5	7 13 7
1879 . . .	3,056,000	70?	2.2?	48 9?	5 9 8?

"This table shows, in the first place, that the wheat-growing area has in six years been diminished by nearly eight hundred thousand acres, or one-fourth of the whole."

Land in Dakota will average three quarters or twenty-four bushels of wheat per acre in a fair season. The product of an acre can be landed in Liverpool or London at fifty cents or two shillings per bushel now, and prospectively for less, or at two pounds eight shillings for the cost of transportation.

	£	*s.*
The average return per acre of English wheat-land for the last six years appears to have been	7	4
Deduct cost of transportation from Dakota	2	8
	4	16
Deduct for insurance and other charges, say about six per cent . .		6
Remainder	4	10

A trifle over ninety cents per bushel as the ample remuneration of the farmer in Dakota or elsewhere.

Another potent factor in this problem may yet be found in the improvement in the Welland Canal in Canada, when it shall become possible for vessels of two thousand tons burden to bring wheat from Duluth, the eastern terminus of the North-

ern Pacific Railroad, on the western shore of Lake Superior, to Oswego or to Ogdensburg, within three hundred and fifty miles of Boston Harbor. By this, another method of reducing the cost of transportation will be in action, and wheat may be carried soon from Dakota to Liverpool for forty cents a bushel.

Although all the elements of the problem are thus undetermined, one proposition may be stated dogmatically; to wit, that there are many parts of this country where wheat will be raised in increasing quantities at and above fifty cents per bushel, and whence it can be carried to Liverpool at fifty cents per bushel, or less, and landed at thirty-four shillings per quarter.

In respect to maize, it may be said, that, upon the fat lands of Indiana and Illinois, a boy working a pair of horses can make one hundred tons in one hundred days in a good season. Upon corn raised at this measure of labor, Western hogs are fed, and the cattle from the plains of Texas[1] and Colorado are fattened.

Such being the conditions, it seems very certain that we shall continue to supply Great Britain and Western Europe with ever-increasing quantities of bread and meat. There will doubtless be a temporary check to our shipments when good seasons return in Europe, which may bring on a commercial temporary revulsion of greater or less severity here, unless our vicious legal-tender paper debt currency is paid and withdrawn from circulation before the change. The change of conditions is, however, a permanent one; and it seems probable, to say the least, that this country must hereafter be the great source of the staple products of grain, meat, and cotton, for the use of the civilized world. It has been suggested, that, whenever Russia and Eastern Europe are in a normal or peaceful condition, their competition will again be felt, and that the opening of the Suez Canal will bring increasing supplies of wheat from India.

[1] A few years since, a friend of the writer was passing a night with a farmer on the edge of the grazing-country of Texas. In the evening this conversation ensued: —

Traveller. "Are there any paupers in your country?"

Farmer. "Paupers, — what are they?"

Traveller. "Why, poor folks that can't get enough to eat for themselves."

Farmer. "No such here. A man must be a d—d fool that can't shoot a beef-critter when he is hungry."

Further conversation proved that this was the rule. Any one was welcome to the meat, provided he skinned the animal, and left the hide with the owner's brand showing plainly. If he took the hide, it was a State-prison offence.

To this suggestion it may be answered, that cheap labor, measured by low wages, does not always mean — in fact, seldom means — low cost of production. In the use of complex machinery in the factory or on the farm, a few hands at high wages compass the largest product at the lowest cost.

One operative in Lowell, working machinery one year on cotton-drills for China, produces eight thousand pounds of cloth, enough to clothe sixteen hundred Chinamen for a year at five pounds each, or thirty-two hundred East Indians at two pounds and one-half each. No hand spinning or weaving can long compete under these conditions; neither can the farm-laborers of India or Eastern Europe compete with the machine-made wheat of the United States.

Our ports at present occupied may be insufficient for the work; and harbors that are now deserted or unused may be connected with our railways in order to provide sufficient room for the great commerce that is to come.

May not the cheap food and other material thus supplied to Great Britain render her mills and works again prosperous, and the export of their products not only secure recompense for her own laborers, but also pay for our own import of tea, coffee, silks, spices, and other Eastern goods?

We sell England the food and the material: England works the mills, and sells the product to the Far East. We buy the tea, coffee, and sugar: in the London clearing-house the balance is settled. The exchange has worked benefit to all, and has harmed none.

Already the increasing demand of our own country is absorbing the product of our own mills, mines, and iron-works, and even more than their product. Already our export of manufactured cotton goods is being affected by the activity of the home demand, and hundreds of looms are being turned from the export fabrics to those used at home.

The interdependence of nations, and, most of all, of the English-speaking people, asserts itself in spite of all the obstacles that man and nature can interpose; and the Anglo-Saxon race will assert itself and its consanguinity on the two sides of the ocean in the way that must ultimately yield the greatest good to the greatest number.

The chart which accompanies this paper may give to English readers a more complete idea of the vast problem yet to be solved in the occupation of this country.

Upon one-fourteenth part of our whole soil, or upon one-seventh part of that which is fit for agriculture, indicated by the lines showing the relative area that they occupy, we produce the hay and roots that we require, and all the grains and cotton that we need ourselves, with so much more, that, even if we did not produce an ounce of gold or silver within our borders, we could command the treasures of the world. Yet, if we consider the average product per acre in respect to every one of these crops, we find that it does not exceed one-half the quantity that even a reasonably good system of agriculture would bring forth. If we consider the conditions under which each and all of these great crops of grain, hay, and cotton are produced, we find that they represent, in the lesser degree only, the art of agriculture.

The dairy products of the nation cannot readily be graphically presented by a line representing a specific area of land: but the value of the butter and cheese is nearly, if not quite, as great as that of the cotton-crop; and, if the value of the milk consumed as food be added, the total value of the dairy product is more than that of the cotton-crop, and as much as or more than that of the wheat-crop.

Tobacco, sugar, and rice occupy so small a space, that the scale of the chart will hardly suffice to picture them.

The production of wool cannot be graphically defined. Its final home may be upon the cotton-field, where sheep, fed upon the cake that is left after the oil has been taken from the kernel of the seed, will fertilize the soil, double the crop of cotton, and add the wool-clip to the profit of the whole.

We number now nearly or quite fifty million people. A hundred millions could be sustained, without increasing the area of a single farm or adding one to their number, by merely bringing our product up to the average standard of reasonably good agriculture; and then there might remain for export twice the quantity we now send abroad to feed the hungry in foreign lands. No longer divided by the curse of slavery, this nation is now united by bonds of mutual interest and of common speech, tied by the iron band of eighty-five thousand miles of railway, and is yet only beginning to feel the vital power and grandeur of a truly national existence.

What may be the future of this land few can yet conceive.

Texas alone comprises as much territory as the German Em-

pire, England, and Wales combined. Texas has now about two million people within her boundaries; the Empire of Germany, England, and Wales, about sixty-seven millions. The good land in Texas is equal in area to the good land in Germany and Great Britain.

Kansas, Nebraska, and Iowa combined, more than equal France in area, and possess more fertile land. Only twenty-five years ago John Brown and his companions redeemed Kansas from slavery; Nebraska was then indicated on our own maps as a part of "the Great American Desert;" and Iowa had scarcely become a State. Their population may now be two million five hundred thousand. France has thirty-seven millions.

The great middle section of Eastern Tennessee, Northern Georgia, Western Carolina, and Southern Virginia, has been hemmed in by the curse of slavery, and is yet almost a *terra incognita;* but it is replete with wealth in minerals, in timber, and in fertile valleys of almost unequalled climate for health and vigor. This section is equal to the Austrian Empire in its area, and more than equal in resources. It has a sparse population of only one or two millions. The Austrian Empire has over thirty-seven millions.

The healthy upland country of Georgia, Alabama, and the Carolinas, contains vast areas of fertile woodland, which can be bought by the hundred thousand acres at half a dollar, or two shillings, an acre, on which sheep and cotton thrive equally well. These sections are being slowly occupied by white farmers, and wait for immigrants who can bring them to use. In a few short years, sheep, fed mainly upon the kernel of the cotton-seed and upon the grasses that follow the cotton, will send to market from the same fields, alternately occupied, as much wool as cotton.

This warm section is more than equal to Italy in area: it has perhaps two million of people. Italy contains twenty-seven millions.

The fertile lands of the Shenandoah Valley in Virginia, and along the Potomac in Maryland, more than equal Belgium. They may contain half a million people. Belgium has more than five millions.

In the consideration of this problem of productive capacity, there are other factors of the greatest importance. What are the burdens to be borne by our people compared to others? What is the mortgage on this land that we possess?

For the purpose of this consideration we will omit the half-civilized empire of Russia, with its vast area in Europe of 2,261,657 square miles, containing 78,281,447 people, and burdened by its almost unknown national debt. We will omit the half-organized states of Roumania, 45,642 square miles and 5,073,000 of people; Servia, 20,850 square miles, 1,719,522 people; Montenegro, 1,770 square miles, 195,500 people. We will omit the dying empire of Turkey in Europe, and the newly created states of Bulgaria, Eastern Roumelia, Bosnia, and Herzegovina, about 128,000 square miles and 8,315,000 people.

We will make our comparison only with the civilized countries of Europe. The nations and states of Austria, Germany, France, Spain, Sweden, Norway, England, Scotland, Ireland, Italy, Portugal, Netherlands, Greece, Switzerland, Denmark, and Belgium, comprise 1,478,540 square miles, — an area about equal to the arable land of the United States. Their population, according to the census of each country, taken at various dates, in 1875 and subsequently, was 217,956,485. Their national debts amounted to $15,719,587,040 (nearly sixteen thousand millions of dollars), seven-eighths of which, or more, were incurred for wars in which the people had no voice, but which were entered upon to sustain the vested wrongs with which past generations of rulers have burdened the people of the present time.

These states and nations are guarded by armed camps, containing standing armies to the number of 1,954,334 men, while a far greater number, kept in reserve and liable to be called to active war at a moment's notice, are wasting half their lives in military drill. In the freest nation of all — Great Britain — one-half the House of Lords and one-third of the House of Commons are said to be connected in some direct manner with the army, and are the men who mainly sustain the Tory administration in its policy of war, rapine, and aggression.

It may be permitted an American to contrast the condition of the United States with the conditions of other lands, not in any boastful spirit, but because, if there is not hope for humanity on such a continent as this, there may be little hope anywhere. If we had not attained welfare, poor indeed would be our record. If we have achieved success, it is because we are a branch of that independent Teutonic race by whom the condition of the world is being changed.

It is but fourteen years since our national debt was over three thousand million dollars. Its full amount never appeared by the books of the treasury; because, before the accounts that were due and unpaid at the end of the war could be audited and entered, two hundred and fifty million dollars had been paid. Since then it has been reduced seven hundred and fifty million dollars more, and we now owe but two thousand million dollars.[1]

Our army is but a border police of twenty-five thousand men. Before the end of the century our debt may be all paid; and, if justice is done to the Indian tribes, we shall have less need of an army then than now.

Let it not be said that we are blind to our own short-comings. We know well that the greatness of a people consists not wholly in mere material things; and, while we thus see on what substantial grounds we may look forward to a future of brilliant and unexampled prosperity and peace, we may well remember that the riches of a nation consist neither in abundance of money nor in abundance of land: but, in the words spoken a century since by one of the great merchants of Philadelphia,

[1] In respect to the debt of the United States, it may be stated that the maximum recorded debt appeared in the official statement of Aug. 1, 1865, about three months after the close of the war, when the amount was $2,757,689,571.

The last year of the war had been the year of greatest financial danger. The revenue from taxation was very large; but it was still insufficient to meet the annual expenditure, which in 1865 was $1,217,704,200.

In April, at the time of the surrender of Lee, accounts were outstanding that had been passed for payment, and were over-due, to the amount of more than $120,000,000. Treasury-vouchers for such amounts were selling at ten to twenty per cent discount in paper money. In short, the treasury was so near to absolute bankruptcy, that the old officials, to whom only the facts were known, dreaded the collapse that they feared might come at any moment.

The expenditures of the Government on *war account* during the fifteen months from April 1, 1865, — the month in which the rebel armies surrendered, — to the end of the next fiscal year, were $920,778,252, of which at least $250,000,000 was due on the 1st of August, 1865, for the back pay of the troops, for debts due by the commissary department, for bounties, for the reimbursement of money advanced by the loyal States, and for other claims afterwards admitted and paid.

This sum must be added to the apparent amount due Aug. 1, and the aggregate amounts in round figures to $3,000,000,000.

In an analysis made in 1868 the writer computed the maximum debt to have been $3,287,733,329; but he then included some items that a subsequent examination proved to be in some doubt as to the date.

In his last report to Congress, Secretary Hugh McCulloch estimated the maximum debt to have been $2,997,386,203.

To him more than any other man is due the credit of having guided the finances of this country through the period of greatest financial danger, of having brought order out of chaos in the form of our debt; whose policy, had it been adhered to,

Peletiah Webster, whose works are too little known, they do consist in "good laws, good public officers, in virtuous citizens, in strength and concord, in wisdom, in justice, in wise counsels, and in manly force."

But may not a nation that has freed more than four million slaves, and that has brought a paper currency up from a discount of over sixty per cent to par, and to redemption on demand in gold coin, trust to its own power to deal with the problems yet to come, which are trivial compared to those which have shaken our national existence to its very foundation?

Let us, however, return to the main purpose of this paper. It has been proved that cheap transportation has been accomplished to a degree that the wildest advocate of a State or national railway system never dreamed of. In 1869 the average charge on a ton of merchandise, all kinds included, from Chicago to the seaboard, was twenty-four dollars. In 1879 it was a little less than eight dollars, and has been at times much lower. This is the average on all merchandise. Grain

would have saved us the inflation that brought on the panic of 1873; and whose wise measures while he held power have been the foundation of all our subsequent success in the treatment of our currency and of our debt.

The form of debt was very bad in 1865: much of it was due on demand, and yet more at high rates of interest ranging from six to seven and three-tenths per cent.

Under the gradual working of the funding process, the interest-charge reached its maximum in the fiscal year 1868, when it amounted to $143,781,592.

In 1868 it became possible to compute the cost of the war, covering seven and a quarter years, — four of actual war, and three of reconstruction.

From April 1, 1861, to June 30, 1868, the expenditures of the United-States Government were		$4,698,349,486
Of which sum there had been received from the taxes	$2,213,349,486	
There was still due in various forms, funded and unfunded	2,485,000,000	
	$4,698,349,486	

Since 1868 our expenditures have been over $3,100,000,000, all of which has been collected by taxation; and we have received from the taxes nearly $500,000,000 in addition, which has been applied to the reduction of debt.

On the 1st of January, 1880, our debt was only	$2,011,798,505
The interest-charge is	83,000,000
Which will soon be reduced to, by the conversion of the six and five per cent bonds about maturing, into four per cents	75,000,000
Our record of fifteen years, not yet quite completed, since the end of a war when one million of soldiers in active service were disbanded, shows a reduction of debt of not less than	1,000,000,000
A reduction of the interest-charge already of	59,000,000
Which reduction will presently be increased by at least	10,000,000

and meat are carried at much lower rates; at times as low as three dollars and sixty cents per ton to New York, and, I believe, two dollars and fifty cents per ton to Baltimore.

Within twenty years a revolution has been effected in construction of ocean steamers by the substitution of the screw for the paddle, and the adoption of the compound engine.

Yet we have but entered upon the age of steel: no one yet knows the exact economy of the steel rail. The present locomotive-engine is barbarous in its waste of fuel: not over three or four per cent of the power of the fuel is utilized by being converted into the actual motion of the train, while the dead weight of the clumsy wooden car averages three to one of the load carried. Not over one pound in a hundred of the fuel consumed is actually and absolutely applied to the movement of the load: the rest is absorbed by waste and friction.

The absolute cost of grain and meat in the West and South-West cannot, as before stated, now be defined with positive accuracy. Suffice it, that the present cost and the present rates of transportation have caused a social revolution in the East, and are causing a social revolution in Great Britain. But the future effect of the unknown factor cannot yet be conceived. The ultimate cost of moving grain and meat must be less, and can never be more. There will be greater competition and greater economy. We are constructing thousands of miles of new railway, and hundreds of inventive brains are at work upon the problem of diminishing the cost of construction and operation.

If one per cent of the absolute power stored up in our coal-beds has sufficed to make the changes we are now witnessing, what will be the effect when we learn how to utilize two per cent and decrease the other elements of cost in the same proportion? What are the terms of the equation by which we shall convert distance into dollars or pounds sterling a few years hence? In that unknown quantity, is not the margin for the rent of land in England to be sought, if any rent is to be paid? and upon the solution of this problem in social mathematics, does not the duration of the present social order in Great Britain mainly depend?[1]

[1] It is not to be assumed, especially by American readers, that the rent of land used for agriculture in Great Britain forms any very great proportion of the annual income of the people of Great Britain. It is rather a form of society that is now on trial.

In conclusion, the extent of our present railway service may be considered; and for this purpose I avail myself of the carefully prepared tables of Mr. Henry V. Poor, editor of "The Railroad Manual of the United States."

In the year 1879, 3,750 miles were added to our total mileage; making 85,591 miles in operation Jan. 1, 1880. It is estimated that 6,000 miles will be constructed in 1880, if the rails can be obtained; making the prospective mileage of Jan. 1, 1881, 91,591.

The construction of railways from 1869 to 1873 at the high cost imposed upon the country by the combination of an inflated paper currency and an excessive tariff, doubtless had more to do with the panic of 1873 than any other single factor; but it already appears that the panic, so far as it was caused by railway construction, arose from the bad and speculative methods in these undertakings, more than from want of justification in the plans of many of them.

Already the Northern Pacific Railroad is justifying its existence; and many other important lines are becoming both useful

A recent analysis in the Financial Reform Almanac of 1880, of the list of land-owners in Great Britain, shows that 2,113 persons own 38,018,548 acres, or 59,400 square miles, out of a total of 77,362,560 acres or 120,879 square miles, — this list of 2,113 individuals comprising all who own 5,000 acres and upwards.

The average rental to each person is £11,486, or $55,822; the total rent being £25,031,593, or $121,653,542.

This is a very large sum; but how small a proportion it bears to the aggregate income of the people of Great Britain, will be seen by the fact that the income tax was in 1877 assessed on a gross amount of £570,331,389, or about $2,772,000,000. The income of the gentry holding agricultural land to the extent of 5,000 acres or more is therefore only one twenty-third part of the assessed income of the nation: therefore it follows, that, if rent of farm-land should be abated wholly, the wealth of the richer classes would be but little affected. Only a change in the social order or distinction would occur.

The average rent per acre paid to the holders of 5,000 acres and upwards is 13*s.* 2*d.*, or $3.20, per acre; but this covers all the great sheep-ranges of Scotland and the bogs of Ireland, the rents of the wheat-fields and grazing-grounds of England being many times as much.

The terms of the competition in the great staple crops between Great Britain and the United States will be more apparent when it is considered that the average rent in Great Britain is above the price at which an area equal to the whole amount of land held by persons owning 5,000 acres or more can be bought in fee-simple in two or three of the best wheat-growing sections of the United States. Unoccupied land of the best quality for the cultivation of grain, to the extent of more than 58,000 square miles, could be easily found in Minnesota, Dakota, Kansas, and Nebraska, that could be purchased at $3 an acre or less; and this land lies within the limit from which the wheat can now be moved to Liverpool at 50 to 60 cents per bushel, and whence it will soon be carried for much less.

and profitable at a fair valuation on a specie basis, which seemed to be hopelessly bankrupt, and, in some cases, almost useless to the present generation.

The following statement, lately prepared by Mr. Poor, will convey an adequate idea of the rapidity of railway construction in the United States, and the decrease in the cost of railway traffic: —

Statement showing the Number of Miles of Railroad in Operation in the United States; the Number annually constructed; the Number of Tons of Iron and Steel Rails annually manufactured in the United States; the Number of Tons annually imported; and the Total Number of Tons of Iron Rails annually used in the United States, from 1850 *to* 1878 *inclusive.*

Year.	Miles of Railroad in Operation.	Miles annually constructed.	Tons of Iron Rails manufactured in the United States.	Tons of Iron Rails imported.	Total Consumption of Iron Rails.	Tons of Steel Rails manufactured annually in the United States.	Tons of Steel Rails imported annually.
1850 . .	9,021	1,656	44,083	159,080	203,163	–	–
1851 . .	10,982	1,961	50,603	226,350	276,953	–	–
1852 . .	12,908	1,926	62,478	294,750	357,228	–	–
1853 . .	15,360	2,452	87,864	358,794	446,658	–	–
1854 . .	16,720	1,360	108,016	339,439	447,455	–	–
1855 . .	18,374	1,654	138,674	153,019	291,693	–	–
1856 . .	22,016	3,647	180,018	186,594	366,612	–	–
1857 . .	24,503	2,647	161,918	215,116	377,084	–	–
1858 . .	26,968	2,465	163,712	90,894	254,606	–	–
1859 . .	28,789	1,821	195,454	83,958	279,412	–	–
1860 . .	30,635	1,846	205,038	146,610	351,648	–	–
1861 . .	31,286	651	187,818	89,388	279,306	–	–
1862 . .	32,120	834	213,912	10,186	224,098	–	–
1863 . .	33,170	1,050	275,768	20,506	296,274	–	–
1864 . .	33,908	738	335,369	142,457	477,826	–	–
1865 . .	35,085	1,177	356,292	63,327	419,619	–	–
1866 . .	36,801	1,742	430,778	117,878	548,656	–	–
1867 . .	39,250	2,449	462,108	184,840	646,948	2,500	–
1868 . .	42,229	2,979	506,714	300,160	806,874	7,225	–
1869 . .	46,844	4,615	593,586	336,590	930,086	9,650	–
1870 . .	52,914	6,070	620,000	472,403	1,092,403	34,000	–
1871 . .	60,283	7,379	775,733	572,386	1,348,119	38,250	50,701
1872 . .	66,171	5,878	1,000,000	530,880	1,530,880	94,070	149,786
1873 . .	70,278	4,107	890,077	258,772	1,148,849	129,015	159,571
1874 . .	72,383	2,105	729,413	108,311	837,724	144,948	100,515
1875 . .	74,096	1,712	792,512	18,258	810,770	290,863	16,316
1876 . .	76,808	2,712	879,629	–	879,629	412,461	–
1877 . .	79,147	2,339	764,709	–	764,709	432,169	–
1878 . .	81,841	2,694	882,685	–	882,685	550,398	–

Statement showing the Miles of Railroad in Operation in the United States, with their Cost, Gross and Net Earnings, and Amount of Dividends paid, from 1871 *to* 1878 *inclusive.*

Year.	Miles in operation.	Cost.	Gross Earnings.	Net Earnings.	Dividends paid.
1871 .	44,614	$2,664,227,000	$403,329,000	$141,746.000	$56,456,000
1872 .	57,323	3,159,423,000	465.241,000	165,754,000	64,418,000
1873 .	66,237	3,784,543,000	526,419.000	183,810,000	67,120,000
1874 .	69,273	4,221,763,000	520,466,000	189,570,000	67,042,000
1875 .	71,759	4,415,631,000	503,065,000	185,506,000	74,294,000
1876 .	73,508	4,468,591,000	497,257,000	186,452,000	68,039,000
1877 .	74,112	4,568,597,000	472,909,000	170,976,000	58,556,000
1878 .	78,960	4,589,948,000	490,703,000	187,575,000	53,629,000

The preceding statement shows, that, while within the past eight years the cost of the railroads of the country has increased over seventy-two per cent, their gross earnings have increased only about twenty per cent, and their net earnings only thirty-two per cent. Within the same period there has been an actual decrease in the amount of dividends paid. Assuming the share capital invested in our roads to equal $2,500,000,000, the rate of dividends paid on it hardly exceeds two per cent annually on the aggregate investment.

The dividend column shows the extent of the depression and the decrease of profit. In this, as in all other work in this country, "hard times" have been severe; but no other schoolmaster could have been so effective in teaching a lesson more needed in this country than in any other civilized nation, — the lesson of economy in constructing and operating railways, factories, mines, and metal-works. In the prosperity that has now ensued we are reaping the benefit of these lessons, as the balance-sheets of the next few years will give evidence.

Mr. Poor computed the tonnage of all the railroads of the United States in 1870 at 72,500,000 tons, in 1878 at 200,000,000, and in 1879 at 250,000,000.

The amount received for merchandise in 1870 he estimated at about $275,000,000. Since that date the amounts received for merchandise and passengers respectively have been —

Year.	Passengers.	Merchandise.	Total.
1871	$108,898,886	$294,430,322	$403,329,208
1872	132,309,270	340,931,785	465,241,055
1873	137,384,427	389,035,508	521,419,935
1874	140,999,081	379,466,935	520,466,016
1875	139,105,271	363,960,234	503.065,505
1876	136.120,583	361,137,376	497.257,959
1877	125,204,724	347,704,548	472,909,272
1878	124,637,290	365,466,061	490,103,351

It will be observed, however, that while the railway system, as a whole, may not have exceeded two per cent in the dividends paid, the New-York Central Railroad and its connections, comprising a system of about one thousand miles, remained very profitable during the whole period of depression, as did many other lines.

It will also be observed, that, while thus profitable to its owners, the New-York Central Railroad system, or consolidated line, does the largest amount of work at the least cost, probably carrying ten million tons in 1879; and that it is the controlling factor in the movement of meat and grain from West to East.

It follows that the great cheapness that has been attained is not temporary but permanent, and that increase of traffic, within certain limits not yet found, is marked by decrease of cost.

From the statistics of 1879, just compiled, it appears that the average charge on all merchandise over the New-York Central Railroad and its connections, was only 0.81 cents per ton per mile.[1]

[1] The following statement recently made by Mr. Poor brings into most vivid light the change that the railroad has made, and is making: —

"The advantages resulting from the use of steel over iron rails is strikingly illustrated by the results achieved on the New-York Central and Hudson-River Railroad. In 1869 this road transported 589,362,823 tons of freight one mile, at a charge of 2.4 cents per ton per mile. In 1879 this road transported 2,295,827,387 tons at a charge of 0.81 cents per ton per mile. The earnings of this road from freight, in 1869, equalled $14,166,000; in 1879, $18,270,250. The amount of service performed in this period increased at the rate of 289 per cent; the amount of compensation received from the public increased at the rate of 28 per cent. Had the road received the same rate of compensation in 1879 that it did in 1869, its receipts from freight would have equalled $55,099,857 against $18,270,250. The saving in a single year to the producer and the consumer, from the reduced rates of transportation over this road, equalled $36,829,607. In 1869, at the current rates for the year, the charge, by this road, for the transportation of a ton of merchandise from Chicago

There is much contention in this country in regard to the railroad corporation as a factor in our own politics, and much complaint is made in respect to alleged monopolies; but it will be observed that the great lines against which this charge is made — to wit, the systems consolidated and designated as the New-York Central, the Erie, the Pennsylvania, and the Baltimore and Ohio — may also be named and designated as comprising the specific miles of railroad on which the largest service is done for the community at the least relative cost.

It would matter not if all these lines were consolidated, even under one man's guidance. The same rule would control him that now controls them all, and compels a constant abatement in the charge, constant improvement in method, and constant reduction in cost of operation. The rule is, that it is not the competition of rail with rail that controls or limits the charge that may be made for their use, but the competition of product with product in the great markets of the country and of the world. No man, and no combination of men, can permanently prevent this competition working its just and beneficent results in the wider distribution of the elements of subsistence, in the abundant consumption of which material prosperity consists.

to New York equalled $24 the ton. In 1879 this road performed the same service for $7.90 the ton. The difference in charge equalled $16.10 the ton. The tonnage traffic of this road for 1879 equalled one-twentieth that of all the railroads of the country. Had a similar reduction of charges between 1869 and 1879 been made by all the other roads that was made on the Central, the total would have equalled $737,000,000, to be divided between the producer and the consumer. The saving to the farmer, from reduced charges of transportation, was far greater than the profit received by him on his crop. But, for such reduction in charges (with no increase in price), every bushel of grain sent east from Chicago would have involved a positive loss to the producer. Between 1869 and 1879 this road was relaid with steel rails, to which, more than to any other cause, was the great reduction in charges due. But the direct saving to producer and consumer sinks into insignificance compared with other advantages which followed the reduction of charges on this and other great trunk-lines. It gave to the wheat-grower, in the States and Territories lying 1,500 miles west from New York, the monopoly of supplying Western Europe with breadstuffs and provisions. An enormous balance of trade, followed by immense imports of gold, was the result, giving an extraordinary impulse to every department of industry throughout the country, and rendering comparatively easy our crowning achievement — the resumption of specie payments — without which the country must have speedily become morally as well as financially bankrupt. Its markets are upon its eastern seaboard, or in Europe. The whole surplus products of the interior have to be transported, — the greater part of them immense distances. Without railroads the greater part of these would have no commercial value whatever. Such value increases just in ratio as the cost of their transportation is reduced."

In the distribution of the productions that constitute material welfare, a few dates may be given that mark recent eras.

The Louisiana purchase, which brought the great Mississippi Valley under the dominion of the English-speaking race, was made in 1806.

Missouri and Arkansas were the only States organized beyond the Mississippi up to 1833. Cursed by slavery, they had lived in unprogressive and almost semi-barbarous conditions, shunned by the immigrants who were soon to pour into the free States.

In 1833 the first farm was broken in what soon constituted the free Territory, and then the first free State, beyond the Mississippi, — the State of Iowa.

In 1849 Minnesota was first established under a territorial government with five thousand inhabitants.

In 1854 to 1856 John Brown and his associates began the war for freedom which ended in 1865, and soon Kansas was counted among the States of the Union.

In 1879 Kansas contained eight hundred and forty-nine thousand people, and probably now has one million.

The table of the crops of 1879, appended hereto, will show where these States now stand.

In April, 1865, the civil war of slavery against freedom ended, and the Declaration of Independence was vindicated.

One million of men in the armies of the North, and all the soldiers who remained in the Southern armies, returned to the pursuits of peace.

The consolidation, or, as we might more fitly name it, the union, of the railway system of the North, in or about 1861–62, made the concentration and subsistence of our troops possible. In war, as in peace, it has been the railroad that has been one of the greatest factors in our politics. It moved the continually increasing crops, which, even through the war itself, the application of machinery to agriculture made larger and larger.

Since 1862 we have completed one line of railroad to the Pacific Ocean, to which it is now absolutely sure another line will soon be added through Texas to connect with the Southern Pacific Railroad in California. The North Pacific is being pressed on, its objective point being Puget Sound; and yet a fourth is contemplated, on the line of the 35th parallel, which may possibly be constructed.

Since 1865 we have paid more than one-third of our war debt. It has been the railroad that moved the commodities in which this payment really consisted, money being only a measure of the payment.

We have restored the specie standard of value; and specie payment is nearly, and soon will be absolutely, assured as the only law of our land, by the withdrawal of greenbacks, or legal-tender United-States notes.

This again has been made possible by the railroad. When the Pacific Railroad reached the mining country of California, Nevada, and Colorado, it altered all the conditions of the cost of production of the precious metals.

Prior to the discovery of gold in California and Australia, in 1849 and 1850, there was no mine of either gold or silver of any importance under the control of an English-speaking State, or within reach of a railroad.

In the first few years after these discoveries came the enormous supply of gold from placer-mining or washing under a rude system and controlled by "Lynch law."

In 1866 the opening of the Pacific Railroads altered all the conditions of the cost of production. The gold and silver bearing States and Territories of the United States are now permeated by more than five thousand miles of railway, reaching the very mouths of the mines. Their branches are being constantly extended; and now Arizona and New Mexico, the regions from which the Spaniards derived the greatest supply of these metals, are being penetrated by the railroad in several directions. Hydraulic mining has been perfected, and is conducted in the most complete and scientific manner.

Within one or two years after each mining-camp is established, if the work is profitable, a town or city grows up, law is enforced, and science is applied under safe conditions.

On the flanks of the ridges in which the mines are opened lie the great plains stocked with cattle, and on which, by irrigation, the largest crops of wheat are now produced. Laborers are to be had at moderate wages, and all the conditions of low cost of production have been brought in force, such as never existed before in the history of the world in respect to the precious metals. What the effect of these vast changes may yet be is a question of geology.

First came the surface-washings, next the immense yield of

the Comstock lode, and now the wonders of Leadville; while the rumors from Arizona whisper of chances that may eclipse all these. Yet behind all these, attracting far less attention, hydraulic mining is working steadily and surely over areas not yet measured.[1]

In this again the railroad has been the most potent factor. What is to be the result of this new force, applied to unknown quantities of gold and silver, is a problem that the future only can solve.

What is called the "silver question," now agitating many nations, is but one phase of the effect of this new force applied to silver-mining. The effect of the enormous production, especially of gold, since 1850, is yet a question at issue among economists.

In a paper submitted to the Statistical Society of England, published in their Journal in March, 1879, Mr. Robert Giffen attempts to prove an appreciation or scarcity of gold by a comparison of prices at various dates.

It is admitted that the suspension of specie payments, in this country and in several countries of Europe, may have caused a temporary and local excess and consequent depreciation of

[1] Of the total production of gold heretofore made in California, nearly one-half — say $500,000,000 — has been obtained from the hydraulic mines, which did not begin to yield with much freedom during the first six or eight years of the new gold epoch. Latterly from a half to two-thirds of the yearly product has been derived from this source, which proportion will be kept up and very likely much enlarged in the future.

The following table shows the production made by some of the leading hydraulic mines and mining localities during the year 1878, also yield per cubic yard of gravel washed: —

Name of Company.	County.	Product.	Yield per Cubic Yard.
Milton	Nevada.	$540,000	15 cents.
North Bloomfield	"	315,000	17 "
Eureka Lake	"	335,000	13 "
Blue Tent	"	105,000	13 "
Liberty Hill and vicinity	"	103,000	24 "
Little York and vicinity	"	550,000	17 "
Dutch Flat and vicinity	Placer.	375,000	14 "
Gold Run	"	275,000	13 "
Forrest Hill Divide	"	390,000	21 "
Excelsior	Yuba.	327,000	21 "
Spring Valley	Butte.	254,000	13 "
Brandy City	Sierra.	133,000	23 "

From Hydraulic Mining, by Dr. Henry Degroot, M.E.

gold in Great Britain and an advance in gold prices in England between 1861 and the panic of 1873, and that there has been in England an appreciation of gold since 1873; but this alleged appreciation, even in England, has been rather a restoration to a more normal condition than prevailed in that period of war inflation and extravagance from 1861 to 1873. If Mr. Giffen attempts to prove a general scarcity of gold for existing use, it seems to be now apparent that the facts are against him. Prices are now again rising in Europe as well as here. We have retained our own product of gold for many months, and have also drawn eighty-four million dollars from Europe; yet the bank-reserves in gold of Europe are still enormous.

But Mr. Giffen attempted, in January last, to prove much more than a temporary aberration in England only, and alleged that we had entered upon a gradual appreciation of gold as indicated by falling prices. For this purpose a list of the prices of 22 staple articles, compiled in "The Economist" annually since 1845, was used. In this list the average prices in London from 1845 to 1850 are established each at a standard of 100: the average of the 22 therefore gives an index number of 2,200. After 1850 the new gold supplies became an important factor in prices.

The articles in this list are, —

1. Coffee.
2. Sugar.
3. Tea.
4. Tobacco.
5. Wheat.
6. Butchers' meat.
7. Cotton of all kinds.
8. Raw silk.
9. Flax and hemp.
10. Wool.
11. Indigo.
12. Oils.
13. Timber.
14. Tallow.
15. Leather.
16. Copper.
17. Iron.
18. Lead.
19. Tin.
20. Cotton-wool, Pernambuco only.
21. Cotton yarn.
22. Cotton cloth.

In 1865 and 1866 the highest point was reached, the index numbers being respectively 3,575 and 3,564, both years having been greatly affected by the high prices of cotton.

In 1873 the index number marked 2,947, since which there has been a progressive decline, until Jan. 1, 1879, marked 2,227, or only a trifle above 1845–50. Of 1879 we have as yet no record; but July 1, 1879, must have marked a lower index number than 1845–50 by a small percentage.

A decline in prices in England has therefore been established, and a return to the ratio of a period when gold was

relatively scarce is admitted; that is, to the ratio prevailing before the gold discoveries of 1849 and 1850. *Other things being equal*, Mr. Giffen's position would be completely established. But *are other things equal?*

Very far from it; and it may be held, that in the very fact that the prices of these commodities are not very far below the index number of 1845–50 is to be found conclusive proof that gold has greatly depreciated since that date, because, in respect to almost every one of the commodities included in the list, there has been either a very great reduction in the cost of production, or a very great increase in the supply relative to the demand, both facts tending to a decrease in the prices, if the supply of the precious metals had been kept uniform to the demand as compared to the previous quarter of a century. A slight consideration will prove this point. In respect to all the commodities named, there has been a great decrease in the cost of transporting to England. This may suffice as to coffee, tea, raw silk, flax, hemp, and indigo. In respect to other articles, named below, the following points must be considered: —

Sugar. — A vast improvement in the manufacture and in refining.

Tobacco. — Free labor in the United States, already cheaper and more effective than slave labor.

Wheat. — A revolution in the mode of production in the United States, and the change which the railroad and steamship have made in distribution.

Butchers' Meat and Leather. — Texas, Colorado, and the steamship combined.

Cotton. — Free labor and steadily increasing supplies at less and less cost.

Cotton Cloth and Yarn. — One operative now produces as much as three did in 1845–50.

Oils. — The discovery and use of petroleum, and the use of cotton-seed oil.

Timber. — The depletion of forests must have caused a rise in value. This is the only case of the kind in the list.

Wool and Tallow. — California, Australia, Texas, and Oregon, with their vast flocks, unknown in 1845–50.

Copper. — The Calumet and Hecla mines alone sufficient to reduce the price the world over.

Lead and Tin. — Increased supplies, and low cost of transporting.

Iron. — The Bessemer process, and all the other vast improvements in metallurgy and in mining.

In all the other products, arts, and manufactures, who can

measure the reduction of the labor cost? Cannot one hand do as much as three in 1845–50 in almost any one that can be named?

It must be remarked here that since 1852 there has been a singular uniformity in the production of gold and silver combined, and this has been used as an argument for bi-metallism. In Cernuschi's last pamphlet a table is given of "Money issued by Mines, Mountains, and Rivers," from 1849 to 1878 inclusive. The great annual production was reached in 1852, £26,550,000 of gold, £8,120,000 of silver; total, £34,670,000. The variation since then has been, £4,500,000 over in 1853, £3,000,000 less in 1862; the average of twenty-seven years having been £33,677,000. The total product of gold and silver for twenty-seven years, according to this statement, has been as follows: —

Gold	£617,905,000	$2,990,660,200
Silver	291,390,000	1,410,327,600
	£909,295,000	$4,400,987,800

This is rather a large sum; but it may be remarked that the value of the American cotton-crop of the last ten years has been $2,500,000,000 to $3,000,000,000 in gold. We need more cotton than we do gold or silver.

But who can tell when the second Comstock lode may be discovered?

It may well be asked, "Has this railroad scaled down the national debts of the world?" If it is to become dangerous to lend money to nations for purposes of war, and *pay as you fight* becomes the rule, the monument about to be erected to the great men by whose efforts the Union Pacific Railroad was constructed, may perhaps bear a tribute to them as among the peacemakers of the world. But this carries us into the region of visionary politics. The Pacific Railroad is but one line completed since the war.

Since April, 1865, we have added fifty thousand miles to our railway service, and the addition in 1880 will be six thousand more.

In the same period an industrial revolution has occurred in the States that were made free by the war, such as has never before occurred. On the surface there has appeared to be misgovernment, fraud, political disturbance, and want of stability, — sometimes violence.

But, underlying this surface apparently so deeply agitated, great industrial forces have been quietly and surely working to the end indicated by the great crops of cotton; the ten last crops marketed exceeding the ten ante-war crops of slavery by nearly six and a half million bales, while the crop now being marketed will be far the largest ever grown.

It may well be remembered that the constitutions of these Southern States were remodelled after the war on the best methods, and that the great industrial forces now working must soon control their legislation. Violence and anarchy cannot have been the rule in a section that has produced greater crops for sale, and has at the same time been more self-sustaining, than ever before in its history. The political ebullition is but froth upon the surface; the whole region is provided with new opportunities born of liberty, and the leaders of the future are those who are now working out the industrial problems of the present. Liberty, protected by the ballot, has in less than a single generation effaced one-half the wrongs of more than two centuries of slavery. Another decade may be needed to prove these assertions to those who only see the froth upon the surface, and cannot observe the deep, strong currents underneath.

In all these great achievements in human progress, — in the production or *leading forth* of the wealth of the mines, the forests, and the soil, — it has been the railroad that has made all other inventions worth applying; that has caused abundance to rule where famine might have been, and that is now moulding the institutions of centuries to its imperative law.

This article will not be considered by English readers complete without some reference to the tariff system of the United States. The writer's position in respect to the theory of protection is sufficiently well known not to require a restatement. His explanation of the apparent anomalies in our system may therefore be useful.

First, it should be considered, that, within the limits of the United States, absolute free trade exists on a continental scale between States having almost as great diversities of soil and climate and condition as can be found elsewhere on the surface of the globe. The separate governments of these States are sustained by direct taxes upon the real and personal property of their citizens; the methods of taxation varying among them, and even varying within their several limits in a few cases.

The revenue of the General Government, therefore, must now, and for very many years to come, be mainly raised by taxes imposed under national tariff and excise laws. The question of absolute free trade is, therefore, not an open one any more than it is in Great Britain.

The present tariff was not passed as a protective measure, but as a war measure, and at a time when both tariff and excise taxes were considered almost wholly with a view to obtaining the utmost revenue. Crude and unscientific as they may appear, they yet served their purpose well; and in the years 1866 and 1867 they yielded a revenue of one thousand million dollars.

After the war ended, an attempt was made to pass a yet higher tariff as a measure of greater protection, which was defeated; but a lesser special bill upon wool and woollens was passed.

An attempt was made to make the question of free trade a political issue; but this culminated in the fiasco at Cincinnati in 1872, when Horace Greeley, the ablest and most honest advocate of protection who ever attained great influence in the country, was nominated for President by a convention that had been promoted by the advocates of freer trade.

It has since become evident to many who took part in that discussion and convention, that the issue was prematurely raised. The panic of 1873, and the disturbed condition of the Southern States, made it evident that there were questions at issue, in the presence of which the tariff question sunk into relative insignificance, — such as the questions of good and bad money, and of peace, order, and reconstruction, — involving the rights of the lately enfranchised race, to whom the faith of the nation stood pledged. It will not be forgotten by English readers that we have no question connected with the tariff in any degree approaching the importance of the corn-laws of Great Britain; and the events of the last six years of depression and difficulty must have proved to every one that there are factors in social science more potent than any tariff can be, at least in this country.

In the mean time it may be said that a great intellectual change has occurred. The advocates of national isolation have disappeared with the death of Horace Greeley and Henry C. Carey. The interdependence of nations is recognized as fully

by the honest and able advocates of what is called "a tariff for revenue with incidental protection," as it is by the advocates of freer trade, who have in these latter years been fighting with them for a sound currency and for the equal rights of all men before the law.

This intellectual change is so great, that to many advocates of freer trade it has seemed best to avoid the discussion of the theory, lest the contention should retard, rather than promote, reform. The increase of our exports of manufactures and machinery, although they are yet small in amount as compared to the exports of Great Britain, has yet been sufficient to prove to those who might else have doubted, that the argument for sustaining "infant manufactures" had ceased to apply. It has become apparent to a great many representatives of branches of industry that were formerly urgent for protection, that the extension of their own markets would be greatly promoted by the removal of restrictions upon commerce.

On the other hand, there is a dread of legislative changes: it is said that we are now prospering, and should not be subjected to the agitation of questions which are not urgent, and that, even if our system is not the best, it is better to realize the benefits that we are now enjoying from the restoration of specie payment, and not cause disturbance by tariff changes that would for the moment create uncertainty, even if ultimately beneficial.

But the restoration of the specie standard itself, and our renewed prosperity, have brought into permanent view some of the provisions of our tariff that are obnoxious to moderate protectionists, as well as to the advocates of freer trade; and, on the whole, the modification of the present tariff may be considered as only a question of time. It is to be hoped that it may be taken up and treated as thoroughly as the tariff of Great Britain was in 1840 by the committee appointed at the instance of Joseph Hume, whose report has become a historic document, and which served as the basis of the great series of measures begun under the leadership of Sir Robert Peel, and concluded by Mr. Gladstone; but it is to be hoped that our changes may not take so many years.

It may therefore be said that there is in this matter no question of political science pending or needing discussion, but the question of tariff reform is one of time and method. It may

come in detail, or by a general measure carefully prepared to meet the necessity of the country.

It may be hoped that the latter course will be pursued. One of the great evils of such an excessive tariff as that with which we are now burdened is, that it so alters the direction and the conditions of great branches of industry as to make any change difficult; and no man who is not a mere doctrinaire, however devoted he may be to the principles of free trade, would hesitate to admit the claim on the part of those whose capital and labor had been directed into a given channel under the working of a war tariff, that all changes should be fairly considered and gradually made.

Great changes in the legislation of every country must be framed to meet its own conditions; and, however sound the principles of free trade may be (and no one could be more convinced on that point than the writer), their adoption must depend in time and method upon the peculiar circumstances of each country, and of each period if the opposite policy has long prevailed.

It should be remembered by those who are impatient, that the great reforms in Great Britain were not fairly begun until the disaster to which the protective system had brought all the agricultural, manufacturing, and commercial interests, culminated in the period that preceded the first great reform measures of 1842. Even after that, it needed the Irish famine to force the repeal of the corn laws; and the last of the series of changes begun in 1842 was not completed until 1866, when the registry duty on corn was, I believe, finally removed.

A very erroneous idea prevails to some extent in the United States as to the motive of these reforms; and it is often asserted that they were begun when great prosperity had been achieved by the system of tariff taxation that preceded them. How utterly at variance with the facts this view is, has been overlooked even by many in England. The true state of the case has been recorded in these words:—

"It is impossible to convey, by mere statistics of our exports, any adequate picture of the condition of the nation when Sir Robert Peel took office in 1841. Every interest in the country was alike depressed: in the manufacturing districts, mills and workshops were closed, and property daily depreciated in value; in the seaports, shipping was laid up useless in harbor; agricultural laborers were eking out a miserable existence upon

starvation-wages and parochial relief; the revenue was insufficient to meet the national expenditure; the country was brought to the verge of national and universal bankruptcy.

"The protective system, which was supported with the view of rendering the country independent of foreign sources of supply, and thus, it was hoped, fostering the growth of a home trade, had most effectually destroyed that trade by reducing the entire population to beggary, destitution, and want. The masses of the population were unable to procure food, and had consequently nothing to spend on British manufactures." — NOBLE'S *Fiscal Legislation of Great Britain.*

No such pressure of necessity exists, or can exist, in the United States. The events of the last few years have led many persons on both sides of the question to the conviction that the system of tariff taxation in this country is not as potent, either for good or evil, as they had once thought; and it is not unlikely that the changes which are now admitted to be necessary or expedient will be framed by a commission on which the moderate men on both sides may be represented.

The facilities which the railroad has given have brought about us a system of exchanges, and an opportunity for diversity of employment, such as does not elsewhere exist. Hence it follows that our high duties are but seldom felt severely enough by any one class or interest to promote action adequate to their reduction. The present urgency for a large reduction on the duty on steel rails may, however, be the beginning of something more than special change. It is beginning to be seen, that, unless the changes now foreseen to be necessary are made upon some consistent plan covering the whole subject, there may be years of confusion, uncertainty, and vacillation. The appointment of a commission to revise the whole system is now advocated by many prominent men of all shades of opinion.

Before such a general measure can, however, be passed, it may perhaps happen that some time will elapse. The country has been alarmed, perhaps without reason, by a renewal, or, rather, a revival, of some of the questions left open after the war between North and South. When however, the new distribution of members of the House of Representatives is made, on the basis of the census of 1880, the balance of power will be entirely changed, — the great commercial as well as agricultural State of Texas assuming the most prominent position among the Southern States; Kansas and the great agricultural States

assuming a greater share of power and influence; New England and the Middle States perhaps holding their present relative position; but the old slave States losing greatly.

In respect to the railroad as a factor in the politics of the future of this continent, it may be said that, within a year, two of our great lines will reach El Paso on the northern border of Mexico; thence on the high table-land to the city of Mexico, about one thousand miles, it is said that a track can be laid without a tunnel or any heavy grade. When that is accomplished, another chapter will be opened, and another great area of untold resources will be reached, possessing as salubrious a climate as there is on this continent; El Paso being thirty-eight hundred feet, and the city of Mexico about eight thousand feet, above the level of the sea.

The railroad that now extends to San Antonio, in the southerly part of Texas, is soon to be pushed on to the Rio Grande River, and from there again is an easy route to the city of Mexico.

If English readers find in this essay a spirit of elation, let it not be supposed that it is written in any boastful mood. It may be fair to state that a portion of it was first prepared for publication at home on the day of our national thanksgiving.

At the same time may it not be a cause of elation, not only in America, but in Great Britain as well, that the principles of liberty brought by our ancestors from the mother-land have been sustained through all the dangers of the last century? May not a nation that has survived the iniquity of slavery, the shock of civil war, and the subtle corruption of inconvertible paper money, trust most fully in its system of government, and stand ready to welcome the oppressed of other lands?

May we not rightly ask our "kin beyond the sea" to cease to doubt the "government of the people by the people for the people," and to pay little regard to those, even of our own country, who question the stability of institutions practically based on manhood suffrage, without distinction of race, color, and condition?

The difficulties of the future must not be underrated: the problem of the government of great cities is yet unsolved; and there are many more subtle problems in social science yet to be considered, and dangers yet to be met, that are more obvious

to ourselves than they can be to strangers; but, on the other hand, the greater dangers that we have surmounted in the past give us the assurance of our ability to cope with those that we must overcome in the future.

In conclusion, it may well be considered that the capital of the richest nation in the world never exceeds one, two, or at the utmost three, years' production.

In respect to that portion of the active capital which exists in the form of food, the world is always within less than one year of starvation. Yet, on the other hand, there is always enough. Modern invention and modern appliances assure ample production. In quantity there may never be a failure; but where is it?

The only problem that now greatly affects the material welfare of humanity is the problem of distribution. Had one been asked only ten years since, "Can one hundred and fifty million bushels of grain be moved from the prairies of the West five thousand miles in a single season, to feed the suffering millions of Europe, and prevent almost a famine among the nations?" he who had answered, "Yes: it is only necessary to apply the inventions already made, to accomplish that," would have been deemed a visionary.

It has been accomplished.

Had Sir Henry Bessemer refused the title which he now bears, upon the ground that he himself had done more than any living man to break down the social system of which his title marks one of the orders, who would have admitted that his reason was well grounded?

Has he not accomplished this?

When Mr. Vanderbilt planned the consolidation of the corporations that now constitute the New-York Central Railroad system, and instituted the measures by which the cost of moving a barrel of flour from Chicago to New York has been reduced from one dollar and a half to half a dollar, and by such measures laid the foundation of the largest fortune ever gained by rightful methods in a single lifetime, what would have been the estimation in which he would have been held, had he then said, "I am laying plans to save England from great distress, from riots and bloodshed, perhaps from violent revolution"? Have not he and others accomplished all this, and more?

In the providence of God, working quietly and surely through the minds of men, have all these events happened in due order and sequence; and busy brains are now at work, through whose discoveries and inventions two per cent of the power stored in our mines of coal will be applied to use, instead of one. And with the application of this additional force will come others of like kind in each other department, not only in our railway-service, but in all other methods of distribution. Who can to-day foretell the effect of these beneficent forces?

In presenting this subject I have endeavored to give its various aspects. In this world we can make nothing. All we can do is to move something: we cannot create, but we can direct forces. Prosperity depends upon rapid distribution and ample consumption. Capital is worthless even to its owner unless it is worked to these ends; and in the widest distribution of the products of labor is to be found the highest material welfare, both for laborers and for capitalists.

Only when the legislation of a nation complies with this universal law, can that nation reach its greatest prosperity; and no legislation can have any permanent existence that is not ultimately brought into harmony with it. The true test of modern statesmanship lies in the removal of all obstructive statutes, and the adjustment of legislation to this higher law.

Slavery constituted the widest and also the rudest divergence from the true law of production and distribution. Its passive war culminated in active war; with its removal the chief obstruction to material wealth and welfare that legislators could create has been removed from this nation.

More subtle, but not more dangerous, problems are still before both branches of the English-speaking people. In Great Britain the land and church questions, and the influence of "militaryism," must be met. In the United States, the currency, the tariff, and the right government of great cities, will give us little rest during the present century.

In conclusion, and lest the writer should be charged with ignoring the actual danger that it may be necessary to overcome in the United States before the final and beneficent effect of the railroad system of the country is fully developed and enjoyed by all alike, a few words may be added upon the special danger which is still paramount to all others, and upon which the advocates both of protection and freer trade must

continue to act together, without the least regard to any division of opinion on the minor question of the tariff policy.

It might be presumptuous for an American to attempt thus to forecast the difficulties that may ensue in the settlement of the equally grave question now pressing for solution upon the British branch of the English race; but the measure of the difficulties that are to be met by the American branch may rightly be considered.

The most subtle and dangerous question still at issue in this country is whether the money of the United States shall be good or bad for the next few years. There is no doubt about what it will ultimately be.

The legal money of the country now consists of gold coin and United States notes; the latter now redeemable in coin, but irredeemable when first issued under an act, the purpose of which was to collect a forced loan for war purposes.

During the war these notes depreciated to less than forty per cent of their nominal value: they are now at par, and are nominally redeemed in coin: but although the lawfulness of their re-issue is contested by the ablest lawyers, and the members of the Senate and House of Representatives most competent to decide the question, they are being re-issued, even while the validity of the acts under which the re-issue takes effect is before the Supreme Court for adjudication, it being a question not yet decided. Their re-issue is not confined to the purposes for which the executive might feel obliged to use them under existing laws; but they are being voluntarily forced into use again in the purchase of bonds not yet due, for the sinking fund.

This course is but a repetition of the disastrous policy followed under the administration of the Treasury Department by the predecessors of the present secretary ever since the office was held by Hugh McCulloch. When these notes which have been paid in coin are re-issued in exchange for bonds, such notes being legal tender until otherwise decided by the Supreme Court, and therefore competent under existing laws to constitute a portion of the bank reserves in place of coin — they, in fact, constitute an element of the currency not called into use by the operation of the laws of trade.

They are therefore forced into use where they are not required, and may at any time work the same effect that they

did before; to wit, inflate prices, and presently cause the export of the gold coin which will be displaced by them. Next may follow their depreciation, and possibly another suspension of coin redemption by the treasury of the United States; or, what would be a yet greater misfortune, redemption in depreciated silver coin.

The first steps in this vicious sequence are now apparent; and the malignant effects of the attempt of the Treasury Department to do the work of a bank of issue, for which it is radically unfit, are now to be as plainly seen as they have been many times before.

Speculation waits upon the decision of the secretary of the treasury as to how much bad money he will inject into the currency in each week, and the eaves-droppers of the lobby listen for the corrupt whispers that shall enable them or their confederates to plunder the victims of a false monetary system.

The prices of the necessaries of life are rising (as they have before when the currency was tampered with) faster than the wages of those who do the work of producing them, and strikes are prevailing everywhere. The unwary are being again misled by the specious representations of those who live upon the credulity of their dupes; and the thousand evils of tampering with the money of the country are patent to those who look beneath the surface. Mining-stocks are being sold at such prices that if the product of the mines would pay a dividend on the nominal sums given, silver would be depreciated at least one-half from its present ratio to gold; any thing that is called a railroad serves the purpose of the stock-jobber, and many of the other symptoms are becoming visible which constitute the disease of which a commercial crisis is the usual process of cure.

Whether an inflation caused by the use of Government legal tender notes nominally redeemable in specie, and not cancelled when thus redeemed or paid, but re-issued, will work as great a disaster as the inflation caused by the forced circulation of the same notes when irredeemable, is one of the problems not yet determined.

The enormous crops of the last few years, and the possibility of moving them which the railroad and the steamship have given us, have enabled the treasury department to meet the conditions of the resumption act, and to stand ready thus far

to redeem the notes in gold coin when presented. A true statesman would be able, even now, to assure the stability of coin payments for all time to come; but, to the shame of our intelligence as a people, it is yet a question, whether or not another financial disaster may be needed, before the simple principle of finance is learned, to pay your debt, due on demand, first and finally, rather than to re-issue your own evidences of debt due on demand, and force them into circulation as money in the purchase of long bonds not matured.

If we are saved from another disaster which may come because of the want of capacity on the part of those who assume to govern and control the finances of the country, to comprehend, or their unwillingness to accept, the simple principles that underlie the question, it will be from the same causes that have brought us into our present favorable condition in spite of previous mismanagement.

The enormous productive capacity of the country and the energies of the people, aided by the railway system, have enabled us to surmount financial incapacity, since Hugh McCulloch ceased to be secretary of the treasury, equalled only by that charged on the present Tory administration of Great Britain by the great leaders of the Liberal party.

Full credit may be given to the present secretary of the treasury for executive ability and administrative power. The conduct of affairs has been admirable during the period when the circumstances of the time — our great harvests and the bad crops in Europe — gave us, for the time, the control of the gold of the world.

But the point of danger is near or is already reached; the test of statesmanship is now being applied. Circumstances may again save us; but the re-issue of notes already paid, after the disastrous experience of years past, caused by the same vicious policy, may fully warrant those who resisted that policy then, and foretold its malignant result, in again sounding a note of warning.

The danger of a debt currency must exist so long as the promise of coin is forced into use by an act of legal tender. Such a currency may for a time be redeemable, but it constantly tends to become irredeemable. We have been saved from inflation and an increased issue of irredeemable paper money only by the veto of the President, the policy of whose

financial secretary had led logically and directly to the vicious legislation which was stopped by his veto.

May not the record of history in both cases be the same, — that the principles of liberty and the sentiment of personal independence are so fully ingrained in the English race, as to enable both branches to surmount the obstacles which their own legislators have placed in the way of their progress?

Whether the money be good or bad, whether the land be free or restricted, whether vested wrongs be sustained or vested rights promoted, the sentiments of personal independence and individual liberty may be depended upon as the great safeguards of the English race.

When the time shall come for the history of the last half of the nineteenth century to be written, it will be no true record if it omits from among the chief factors, more potent than almost all beside, the American railroad and the English steamship; and, from among the greatest names, the names of those who organized and developed them.

EDWARD ATKINSON.

BOSTON, MASS., U.S.A., March, 1880.

APPENDIX.

PRODUCT OF THE PRINCIPAL CROPS OF THE UNITED STATES FOR 1879.

States.	Maize.	Wheat.	Oats.	Barley.	Rye.	Buckwheat.	Hay.	Potatoes.	Cotton.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Tons.	Bushels.	Bales, 450 lbs.
Maine . . .	1,585,950	488,688	3,087,000	837,500	46,260	540,000	1,247,400	6,993,000	–
New Hampshire .	1,857,895	159,529	1,225,000	102,900	35,640	117,700	620,630	4,140,040	–
Vermont . .	2,037,960	493,924	3,818,100	132,600	55,200	414,000	1,270,963	5,151,850	–
Massachusetts .	1,386,000	15,354	508,400	51,450	355,550	40,800	928,672	4,244,240	–
Rhode Island .	268,800	–	72,000	8,550	22,750	–	113,680	790,000	–
Connecticut .	2,218,500	39,348	972,900	26,400	484,800	118,300	927,520	3,085,040	–
New York . .	22,705,650	10,746,660	39,828,000	6,200,000	2,770,300	5,151,200	6,156,000	38,407,200	–
New Jersey. .	8,970,560	1,784,115	5,216,000	–	365,750	529,200	661,055	5,170,900	–
Pennsylvania .	44,505,650	22,307,247	32,521,400	619,300	2,973,600	3,740,000	3,409,225	17,513,600	–
Delaware . .	4,860,000	1,012,583	369,600	–	17,000	–	34,557	406,700	–
Maryland . .	13,720,428	6,999,696	3,638,600	–	243,600	91,000	203,112	1,532,200	–
Virginia . .	19,957,600	8,851,007	5,878,800	–	430,200	52,200	219,912	1,255,800	–
North Carolina .	25,677,900	3,223,836	4,870,400	–	324,800	–	118,361	1,104,000	216,979
South Carolina .	9,700,200	1,140,400	1,320,000	–	38,000	–	25,220	103,200	300,184
Georgia . .	20,627,400	3,616,920	6,747,000	–	–	–	35,015	340,000	551,879
Florida . .	1,945,820	–	180,800	–	–	–	–	–	37,707
Alabama . .	25,403,560	1,501,592	2,675,800	–	–	–	34,884	452,760	567,810
Mississippi . .	24,926,720	417,312	662,360	–	–	–	27,165	316,000	799,166
Louisiana . .	12,592,800	–	13,860	–	–	–	–	–	593,431

Texas . .	29,198,000	3,454,200	3,962,500	–	32,400	–	131,916	311,140	735,300
Arkansas . .	22,431,840	1,384,000	1,603,120	–	42,900	–	21,806	696,600	693,416
Tennessee . .	50,898,750	11,852,640	4,986,000	–	318,000	76,500	164,161	1,923,750	454,349
West Virginia .	11,301,360	4,350,580	2,841,020	33,000	255,150	98,700	232,009	901,320	–
Kentucky . .	64,736,000	7,681,520	4,687,200	338,800	1,002,320	–	262,643	1,815,000	–
Ohio . . .	105,686,350	36,591,360	25,716,990	1,270,500	1,240,160	306,850	2,455,985	10,474,800	–
Michigan . .	30,913,500	28,773,120	12,678,800	1,021,800	218,400	595,200	808,794	10,994,900	–
Indiana . .	134,922,150	43,709,148	14,028,310	550,800	504,000	160,000	1,411,200	4,080,000	–
Illinois . .	309,220,650	44,896,830	47,670,400	575,000	4,050,000	148,750	2,648,475	12,751,200	–
Wisconsin . .	39,911,040	20,565,468	34,663,200	4,320,000	2,808,000	520,200	1,227,600	13,555,800	–
Minnesota . .	15,715,000	31,887,135	17,136,000	2,549,100	176,000	126,000	1,609,920	5,050,800	–
Iowa . . .	185,190,720	32,787,043	37,256,400	4,290,000	365,040	144,000	3,564,000	9,090,200	–
Missouri . .	141,937,920	26,802,300	15,429,120	–	804,100	57,000	1,053,000	6,897,800	–
Kansas . .	89,719,740	18,089,060	12,015,000	675,000	2,220,000	70,550	1,499,400	4,184,000	–
Nebraska . .	62,455,580	13,043,703	6,160,000	1,600,000	1,192,280	47,500	620,400	1,215,000	–
California . .	2,814,000	35,000,000	5,072,100	14,501,500	230,100	–	1,232,870	4,274,900	–
Oregon . .	142,400	8,188,800	2,916,000	480,000	24,200	–	186,180	885,600	–
Colorado, Nevada, and Territories,	2,750,100	16,900,000	1,815,000	–	–	–	320,000	1,260,000	*70,166
Total . .	1,544,899,193	448,755,118	364,253,180	40,184,200	23,646,500	13,145,650	35,492,830	181,360,340	†5,020,387

* Indian Territory. † This cotton crop is now being marketed. The cot on year ends Sept. 1, 1880. Commercial estimates exceed this from five to ten per cent. — ED.

DEPARTMENT OF AGRICULTURE, WASHINGTON, D.C., Jan. 5, 1880. CHARLES WORTHINGTON, *Statistician.*

ACREAGE OF THE PRINCIPAL CROPS IN THE UNITED STATES FOR 1879.

States.	Maize.	Wheat.	Oats.	Barley.	Rye.	Buckwheat.	Hay.	Potatoes.	Cotton.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Maine . . .	52,865	30,543	102,900	37,500	2,570	18,000	1,074,210	51,800	–
New Hampshire .	57,166	13,635	35,000	4,900	2,970	5,350	612,262	35,690	–
Vermont . .	56,610	32,495	115,700	5,100	4,600	18,000	1,145,011	35,530	–
Massachusetts .	38,500	853	16,400	2,450	27,350	3,400	595,302	40,810	–
Rhode Island .	8,400	–	3,000	450	1,750	–	71,949	7,900	–
Connecticut .	76,500	2,186	42,300	1,200	30,300	8,450	662,514	31,480	–
New York . .	688,050	716,444	1,288,000	248,000	213,100	257,560	5,306,896	369,300	–
New Jersey .	263,840	145,050	163,000	–	38,500	18,900	528,844	58,100	–
Pennsylvania .	1,271,590	1,457,990	1,049,400	28,150	247,800	170,000	2,544,198	168,400	–
Delaware . .	180,000	77,891	16,800	–	1,000	–	31,997	4,400	–
Maryland . .	448,380	486,090	158,200	–	20,300	4,550	169,260	16,300	–
Virginia . .	1,050,400	962,066	489,900	–	47,800	2,900	184,800	18,200	–
North Carolina .	1,711,860	460,548	266,900	–	40,600	–	85,152	12,000	625,900
South Carolina .	1,293,600	135,762	88,000	–	7,600	–	20,176	1,200	944,650
Georgia . .	2,218,000	401,880	449,800	–	–	–	22,446	5,000	1,591,960
Florida . .	228,920	–	11,300	–	–	–	–	–	161,600
Alabama . .	1,954,120	178,880	157,400	–	–	–	22,218	4,620	1,892,700
Mississippi . .	1,557,920	57,960	57,100	–	–	–	15,794	4,000	2,055,000
Louisiana . .	839,520	–	990	–	–	–	–	–	1,322,000

Texas . .	2,246,000	454,500	158,500	–	2,700	–	121,311	6,620	1,935,000
Arkansas . .	934,660	173,000	69,100	–	3,900	–	16,152	8,100	1,177,500
Tennessee . .	2,035,950	1,481,580	277,000	–	31,800	4,500	137,950	15,390	762,900
West Virginia .	346,560	334,660	127,400	3,300	24,300	4,700	239,184	12,180	–
Kentucky . .	2,023,000	548,680	279,000	12,100	74,800	–	222,579	27,500	–
Ohio . . .	3,019,610	1,876,480	860,100	38,500	67,400	16,150	2,099,132	124,400	–
Michigan . .	835,500	1,498,600	394,000	39,360	16,800	37,200	662,946	97,300	–
Indiana . .	4,088,550	2,153,160	495,700	20,400	28,800	8,000	1,166,281	60,000	–
Illinois . .	8,920,590	2,400,900	1,489,700	25,000	225,000	8,750	2,188,822	144,900	–
Wisconsin . .	1,023,360	1,632,180	888,800	160,000	187,200	30,600	852,500	132,900	–
Minnesota . .	449,000	2,592,450	489,600	87,900	8,000	6,300	1,025,427	36,600	–
Iowa . . .	4,873,440	3,214,416	1,034,900	195,000	23,400	8,000	2,314,285	105,700	–
Missouri . .	3,836,160	1,914,450	627,200	–	47,300	2,850	993,396	75,800	–
Kansas . .	2,718,780	1,644,460	480,600	45,000	111,000	4,150	897,844	52,300	–
Nebraska . .	1,523,380	1,154,310	192,500	80,000	72,700	1,900	339,016	15,000	–
California . .	100,500	2,500,000	153,700	630,500	13,000	–	756,362	39,700	–
Oregon . .	4,450	511,800	81,000	16,000	1,100	–	88,657	7,200	–
Colorado, Nevada, and Territories,	91,670	1,300,000	72,600	–	–	–	250,000	10,500	*126,300
Total . .	53,085,401	†32,545,899	12,683,490	1,680,750	1,625,440	640,210	27,484,873	1,836,820	12,595,510

* Indian Territory. † The Northern and Western States average fifteen to sixteen bushels wheat per acre. The Southern States average ten bushels or less.

DEPARTMENT OF AGRICULTURE, WASHINGTON, D.C., Jan. 5, 1880. CHARLES WORTHINGTON, *Statistician.*

As the statements in respect to the improvement in the agriculture of the East may be subject to question, I have obtained the following confirmation from gentlemen whose past or present official positions have given them positive knowledge of the facts. — E. A.

BOSTON, Jan. 7, 1880.

EDWARD ATKINSON, Esq.

Dear Sir, — In the course of my investigations in respect to the various branches of industry carried on in the State of Massachusetts, it has been conclusively proved that the commonly accepted theory that agriculture has declined in recent years is without any foundation in fact.

The changes which have occurred, in consequence of the cheapness of Western grain and meat, have been as follows: —

1. A change in the locality of the cultivation of land; that is to say, some farms at a distance from towns or railroads have been given up: but this has been more than compensated for, either by the increase of area cultivated near to towns and cities, or by a far higher standard of cultivation of such lands.

2. A much greater diversity of crops cultivated; an increase of dairy-products, and a great improvement in their quality; a great increase of fruit in quantity and variety.

3. A substantial and progressive increase in the value of agricultural products in the aggregate, which cannot be readily stated in money, because the changes which have occurred in the value of the paper or greenback dollar in its appreciation to the specie standard, render a money statement somewhat fallacious.

The case may be summed up in this, — that, during the last ten or twenty years, there has been a progressive increase in the products of agriculture in Massachusetts, and in their specie value, compassed by a higher standard of cultivation of moderate areas of land.

Very truly yours,

CARROLL D. WRIGHT,

Chief of the Bureau of Statistics of Mass.

STATE HOUSE, BOSTON, Jan. 6, 1880.

EDWARD ATKINSON, Esq.

Dear Sir, — The agriculture of this State has undergone a very considerable change within the last twenty-five years, or since the system of railways has been extended to the West. Farmers have left the mountain or hill towns at points distant from the great lines of travel, and the result is a falling off in some of the staple crops

formerly cultivated here as a matter of necessity. They have turned their attention to supplying our local markets, which have justly multiplied, in the last few years, all over the State. Dairy products, garden vegetables, small fruits, and various other crops, have been increased to such an extent that the agricultural statistics of 1875 show a net gain of nearly eight millions of dollars as compared with those of 1865, a period of ten years. This increase of eight million dollars, though not so very large, is sufficient to indicate the change which has taken place, and certainly gives no ground for the assertion that our agriculture has fallen off. In fact, it has steadily and constantly gained. Greater intelligence is brought to bear upon it than ever before. More thought, more scientific study, is devoted to it than was ever the case before. The aggregate number of our domestic animals has not increased to any great extent: in some classes, indeed, it has fallen off; but, at the same time, their intrinsic quality and their value have greatly improved. The farming community as a whole is prosperous, and the outlook for the future is as encouraging as it ever was.

Yours truly, &c.,

CHARLES L. FLINT,

Secretary of the Mass. State Board of Agriculture.

LITTLE FALLS, N.Y., Jan. 19, 1880.

EDWARD ATKINSON, Esq., *Boston, Mass.*

Dear Sir, — I have read with much interest your able article on "The Railroad as a Factor in the Politics of America and Great Britain."

You state very clearly and correctly the effects and results of Western competition on the agriculture of the Eastern and Middle States.

In the State of New York there is a gradual change going on in the character of farming. For instance, the hay and milk farms, which a dozen or fifteen years ago were confined to counties lying along the Hudson River, and in proximity to the city and seaboard, are now being pushed into the interior of the State along the railroads. Milk is now sent from the Mohawk Valley, seventy miles west of the Hudson, to New-York City, or more than two hundred miles, by rail. The shipments of hay are every year reaching out farther and farther westward; and many are turning their attention to hay for shipment to Boston, New York, and other Eastern cities. The culture of vegetables and small fruits for market in the interior and western part of the State is rapidly increasing.

The depression in values for real estate during the past four years has, of course, been very considerable. Still, good farms along the lines of the railroads command better prices now than before the war.

Wheat-growing in the dairy-sections of New York was abandoned many years ago; Indian corn, oats, and barley being raised on such grass-lands as needed breaking. Of late, wheat has been tried in a moderate way in place of oats and barley, and the yield has often been at the rate of forty to forty-five bushels per acre. Our dairy-lands are not exhausted, but are growing better, as is proved by the abundant crops of grain raised when grass-lands are broken up. But the dairymen of New York depend for the most part upon the West for their flour, Indian corn, and ship-stuffs, large quantities of the latter having been used for feeding domestic animals.

You say truly that the railroads have worked great changes in the production of certain crops at the East; but Eastern farmers have a good market, almost at their own doors, for a large variety of articles, which are too bulky or perishable to be shipped from the West with profit; and, when we adapt our crops to the situation, a fair remuneration will result. I am, with great respect,

Yours, &c.,

X. A. WILLARD.

The following statement in regard to the progress of agriculture in the western part of the State of New York has been prepared at the request of Dr. M. B. Anderson, President of Rochester University, to whom the proof-sheets of this article were sent for examination.

The writer, Mr. P. C. Reynolds, is himself a farmer of experience, and is also the agricultural editor of "The Rural Home," a paper published in Rochester, N.Y., which city is in the Genesee Valley, — a valley more noted, but a few years since, for the production of wheat, than almost any other section of the country.

I am the more cautious to sustain the position taken in this paper in respect to the increased product of agriculture in the eastern part of the United States, because the facts are not well known even in this country, and may be questioned.

This letter possesses great value in the light which it gives as to the advantage of a fixed tenure and absolute freedom in the use of land.

The same course of cultivation described in this letter will

doubtless be followed in the Far West, — in Dakota and elsewhere: first to take off successive crops of wheat, until the land shows signs of exhaustion; by that time the more dense population will have created markets for a greater variety of products, and then the true art of agriculture will begin.

Mr. Reynolds makes reference to the products of Western New York. The counties of which he speaks average about five hundred and fifty square miles each; and the section of which he treats comprises five to seven thousand square miles or three to five million acres, fully four-fifths of which is improved arable land, the rest mostly woodland.

ROCHESTER, Feb. 23, 1880.

DR. M. B. ANDERSON,

President of Rochester University.

Honored Sir, — In accordance with your request, I will present to you some of the facts and considerations which have led me to the conclusion that a large proportion of the farmers of New York State, and especially of Western New York, cultivate their farms better, produce larger crops, are more certain of good yields every year, and derive larger incomes from their farms, the soil constantly increasing in fertility, than they did from twenty to forty years ago.

During the first twenty or thirty years in which the soil of Western New York was cultivated, after it was reclaimed from forest, the principal crop — almost the only one that would sell for cash — was wheat. Many farmers would sow nearly one-half their arable land one year to wheat; the next year they would sow the other half, and thus alternate, the same fields bearing a crop of wheat every other year. The year in which the land rested from wheat, it would be broken up in June and summer-fallowed, and the best farmers would have a growth of clover fourteen or fifteen months from seed to plough under. Summer-fallowing consisted in ploughing two or three times, and harrowing as many times as seemed necessary to keep down the grass and weeds. While this plowing and harrowing reduced the soil to a fine tilth, rendering its plant-food more available for the succeeding crop, it undoubtedly wasted much of the nitrogen contained in the virgin mould upon the scorching summer air.

This was the ordinary method pursued by the most prudent farmers: the more reckless sowed wheat after wheat, rapidly hastening the exhaustion of the primitive fertility of the soil.

As the main crop was wheat, a grain rich in nitrogen, phosphorus, and potash, three scarce and important ingredients of crops, and as nearly all was sold off of the farm, it followed that the cream of the

virgin soil, left by the disappearing forests, was being rapidly transported to the Eastern cities. What little manure was left on the land in the straw was not carefully husbanded and economically applied to growing crops. But little stock was kept by farmers, and not much care was taken to feed that little on such rich food as would make valuable manure.

Improved means of transporting products to the seaboard, the growth of inland towns and cities furnishing better home markets, and the appearance of the wheat-midge, somewhere about the year 1845, with terribly destructive capacities, taught the farmers that wheat could no longer be relied on for profit, but that they must thenceforth turn their attention to other crops. Larger areas were sown to barley and oats, and planted to corn and potatoes; the culture of beans as a field-crop was widely extended, and apple-orchards numerously planted. Farmers also began to investigate and inquire into the best means of improving the fertility of the soil, which had become partially exhausted by successive wheat-crops and reckless waste of plant-food. The more they studied the question, the more convinced they became that they had pursued a ruinous course in shipping so large a proportion of the valuable ingredients of the soil off to the cities, and they recognized the importance of devising some means of retaining more of it upon the land. Hence many of them adopted the plan of feeding their coarse feed, corn, oats, hay, straw, &c., out to some kind of stock. Some farmers preferred sheep to any other stock, either keeping them the year round, selling their wool and increase; or, buying them in the fall, they would feed out their surplus feed to them during the winter, selling them, when fat, for mutton. Others preferred keeping cows, and selling their milk, butter, or cheese. Others again would buy wherever they could to best advantage: in the autumn, two or three year old steers, and feed them for the shambles, selling their crop in the form of beef; and still others would prefer to feed the larger proportion of their coarse grains out to swine, selling them in the form of pork. They were generally satisfied that they were pursuing a wise economy if they received as much for their crops in these manufactured forms as they would have brought in their crude state, leaving the manure on the land to restore its fertility, and compensate them for the labor of feeding.

They also began, about the same time, to adopt a more scientific rotation of crops. The manure of the stock, as made through the winter, was drawn out and spread on the clover-sod, which was planted to corn and potatoes, followed the next year by barley and oats, and those crops followed by wheat, frequently drilling in with the wheat one hundred and fifty or two-hundred pounds of bone-dust,

or superphosphate of lime. Some practise saving quite a proportion of their barnyard manure, rotting it down fine through the summer, and applying it at the time of seeding, either cultivating it in before drilling the wheat, or applying it as a top-dressing afterwards. The land is seeded to clover in the spring, lying in sod two years, and then repeating the rotation. Thus the land is subjected to a crop of wheat once in five years instead of every alternate year.

Those farmers who wish to grow more acres of wheat than corn turn under the clover the second year, when in bloom, cultivate the inverted surface well till seeding-time, and then sow to wheat, using barnyard manure or special fertilizers. Under such treatment the soil increases in productiveness.

When the farmers began to turn their attention to improvement in farming, they saw the necessity of draining their wetter soils; and thousands of miles of blind and open drains were made, converting thousands of acres of uncertain grain-land into good, reliable, productive soil, adapted to all the purposes of the farmer. They also adopted improved implements and machinery for culture, not only saving labor, but cultivating the soil more thoroughly, so that it is cultivated deeper and pulverized finer than formerly.

The numerous large orchards planted from ten to thirty years ago, in many counties of the State, have been coming into bearing during the last twenty years; and in numerous cases farmers derive larger incomes from an orchard of ten or twenty acres, than from one hundred or two hundred acres devoted to ordinary crops, and a larger proportion of the annual income is net profit. We are remarkably deficient in statistics showing the value of the fruit-products of this State; but in correspondence with many noted orchardists, as secretary of the Western New-York Horticultural Society, and editor of a rural paper, I have received information of local crops that must convince us that the value of the entire fruit-products of the State is probably greater than that of either the wheat or the corn crop. A few extracts from reports of county committees to the Horticultural Society show as follows: —

In 1874 fruit was sold in Erie County to the value of $1,500,000; Monroe County, apples, $500,000; Orleans County, apples, $456,904; Genesee County, fruits, $164,225; Wayne County, apples, $500,000; Yates County, fruits, $137,389. Some committees report only apples, others all kinds of native fruits.

In 1875, Erie, fruits, $1,000,000; Genesee, fruits, $153,500; Niagara, fruits, $1,145,000; Orleans, fruits, $784,586; Wayne, fruits, $308,750.

In 1876, Genesee, apples, $223,930; Orleans, apples, $240,000; Onondaga, fruits, $315,560; Monroe, apples, $320,000. These were

simply sales to dealers, principally for shipping, not reckoning the vast amounts sold directly to consumers, and consumed by producers.

In 1875 the committee for Genesee County reported a dwarf-pear orchard, belonging to A. B. Rathbone of Oakfield, from which had been sold, in eight years, pears to the value of $12,691; and one of three acres belonging to John Taylor of Elba, from which had been sold, in five years, pears to the value of $5,328. The varieties were in both instances mainly Duchesse. I saw these orchards, and several others in their neighborhoods yielding full as well, but smaller in area.

In 1876, the committee of Orleans County reported an orchard belonging to Julius Kuck, of 149 trees, from which had been sold, in seven years, apples to the value of $7,871; and another, belonging to William Wood & Son, of twenty-five acres and 1,250 trees, from which had been sold, in six years, apples to the value of $12,942.

By the report of the committee of Niagara County for 1879, an *off* or non-bearing year, Mr. Woodward, from about six acres of his thirty-acre orchard, had 2,100 barrels; Mr. Miller, from fifteen acres, 2,800 barrels; Mr. Corwin, 2,000 barrels; and Mr. Lerch, from about ten acres of his orchard, had 2,500 barrels. Niagara's fruit-crop for 1879 sold as follows: 300,000 barrels of apples, $483,000; 120,000 bushels dried, $24,000; 200,000 bushels cider-apples, $20,000; 250,000 baskets of peaches, $100,000; cherries, $13,000; grapes, $25,000; aggregate, $665,000.

Oliver C. Chapin is a farmer of Ontario County, owning about two hundred acres of fair grain-land. Over one hundred and twenty acres of this farm is in orchard, mainly apple, and between eighty and ninety acres bore fruit in 1879. I had the pleasure of visiting this orchard near the last of August, and it was one of the most fruitful sights I ever beheld. When the fruit was all gathered and sold, Mr. Chapin gave me, at my request, a bill of particulars. Here it is: Total yield of apples, 10,061 barrels, which sold for $16,679.62; total yield of pears, 263 barrels, which sold for $992; aggregate, $17,679.62. Cost of labor, barrels, &c., $4,000. The apples were classified and sold as follows: Packed and sold to shippers, first and second class, 7,907 barrels; sold to evaporators, 1,834 barrels; sold for making cider, 265 barrels.

From these few items that I have given, you may begin to gain a faint idea of the fruit interest of Western New York, the best section for growing fine, high-flavored, long-keeping fruit, in the world; and, when its unequalled capacities for fruit-growing are fairly developed, the value of that class of products will dwarf into comparative insignificance the value of its entire farm products of former years.

A few years since I commenced visiting, during the growing season of crops, farmers in different towns and counties of Western New York, to examine the farms and methods of farming in their several localities; and I soon began to observe that some farms, which I had known from thirty to forty years before, were bearing better crops of almost every kind than they did at that earlier period. And this led me to reflect whether there might not be an error in the commonly received opinion that the soil of Western New York was deteriorating, becoming exhausted, and failing to produce such crops as it once did. I saw that those farmers who had striven to keep abreast with the spirit of progress had sought to know the benefits conferred by science on agriculture, and fallen in with the best methods of culture, were raising from twenty-five to forty bushels of wheat to the acre, about the same amount of barley, and from fifty to sixty bushels of shelled corn; and I knew that those were as large yields as those obtained by the farmers who tilled the virgin soil. Thereafter I took pains to inquire of those farmers with whom I came in contact, whether they raised larger yields, per acre, of the cereals, thirty or forty years ago than now; and learned, in every instance, that they were raising larger crops at the present time than ever before.

I have visited, within the last five years, many farms in fifteen towns of Monroe, five towns of Orleans, two of Niagara, ten of Genesee, six of Wyoming, three of Livingston, four of Wayne, eight of Ontario, and four of Seneca, and have had for guides some of the best-informed farmers of their respective localities; and what I learned but confirmed the conviction that the farms of this portion of the State are steadily increasing in fertility and productiveness, and that the farmers themselves, as their incomes increase, are growing in intelligence and receptivity, in their ability to absorb and assimilate the great universe of love, beauty, and truth, and so live larger, more liberal lives.

To show you that I have something more than my own observations and deductions on which to base my convictions, I have collated from census reports, Agricultural Department reports, and other sources, a few statistics showing the agricultural productions of this State twenty and thirty years ago as compared with more recent reports, and also showing how the products of New-York State compare with those of the great States of the West.

In 1850 New York produced 13,121,498 bushels of wheat, 17,850,400 bushels of corn, and 15,398,368 bushels of potatoes.

A table showing the values and quantities of leading staple crops of New-York State, by the census report of 1860 *and the report of the Department of Agriculture for* 1878, *the last received.*

	1860.	1878.
Cash value of live stock	$103,856,296	$131,034,085
Wheat, bushels	8,681,105	14,128,400
Corn, "	20,061,049	25,020,000
Oats, "	37,175,134	48,080,000
Barley, "	4,186,668	4,917,200
Hay, tons	3,564,793	6,480,000
Potatoes, bushels	26,477,394	18,135,400
Orchard products, value	3,726,380	8,347,417

In 1850 the number of improved acres in the State was 12,408,964, valued at $554,546,642; in 1870, improved acres 15,627,206, valued at $1,272,857,776. This does not look much like depreciation in value of land or its products.

A table showing average yield per acre of leading crops in several of the great grain-producing States in 1878.

	Wheat.	Corn.	Oats.	Barley.	Hay, tons.
New York	19	36.	32.2	19	1.35
Ohio	18	34.9	35.9	29	1.51
Michigan	18.3	37.4	32.1	26	1.31
Indiana	16	32.8	29.6	25	1.40
Illinois	13.6	27.1	35.9	23	1.49
Wisconsin	12 4	37.5	38.1	26	1.55
Minnesota	12	38.1	42.4	29	1.72
Iowa	9.4	37.4	36.3	24	1.80
Kansas	16.3	33 9	36	26	1.80

In 1868, the oldest Agricultural Department Report upon which I can conveniently put my hands, the average yield, per acre, of crops in New York was: wheat 14.6, corn 32, oats 26, barley 21.4, and hay one ton.

In 1872 the total value of all farm products in New York was $253,526,153; Pennsylvania, $183,946,027; Illinois, $210,860,585; Indiana, $122,924,302; Ohio, $198,258,907; Michigan, $81,508,907; Iowa, $114,386,441.

In fact, New-York State was never before producing so much and such valuable products as to-day; and those English visitors who in-

formed the Hon. Mr. Gladstone that the Eastern States were becoming exhausted and impoverished, made a great mistake as far as New York is concerned.

In my statements, I have confined myself mainly to the grain-growing counties of Western New York, because more familiar here; but I am aware that the eastern counties of the State have turned their attention to milk-producing for the great cities, and have thereby greatly increased the value of these products, and that the farmers of the central and south-western counties make a specialty of butter and cheese; and from my knowledge of their intelligence, and the great extent to which they have availed of the teachings of science in converting the products of the soil into milk, butter, and cheese with the greatest economy, I am satisfied that they have increased, and are increasing, the dairy-products of the State. I regret that there are no full statistics of their productions.

One word in regard to the relation of the farmers of this State to railroads and transportation, — a subject in which your correspondent, Mr. Edward Atkinson of Boston, is so deeply interested. Our farmers are not opposed to railroads, and are not unwilling to submit to the natural laws of trade and competition. What they do object to is, that the great railroad-lines running through this State, in order to compete for the carrying of Western products to the seaboard, with lines running through other States, carry Western freight for *less* than they can afford, and attempt to compensate for the loss by charging for carrying our products to the seaboard *more* than it is worth. We are opposed to arbitrary arrangements, and only ask that they shall carry our products, as well as all beyond us, for just what it is worth. We recognize that the farmers upon the great prairies have the advantage of us in cheap land and a fresh soil, plethoric with the accumulated vegetable deposits of ages, while we have the advantage of them in proximity to the best markets and more scientific methods of culture; we protest against railroad corporations depriving us of the former advantage, and rendering our competition with them more unequal by unjust discriminations.

Begging your pardon for expanding this letter so much beyond my intentions when I commenced, I am, with great respect,

Your most obedient,

P. C. REYNOLDS.

Another erroneous conclusion, often accepted in the United States as well as in Great Britain, is that we are drawing upon a virgin soil, and that our abundance is temporary, and may not be continued after the first exhaustion. The following letter

from Mr. Robert P. Porter, one of the editors of "The Chicago Inter-Ocean," contains a complete refutation of this error, and indicates how permanent the production of the prairie soil may be made by right methods of agriculture.

DEPARTMENT OF THE INTERIOR, CENSUS OFFICE.
DEPARTMENT OF WEALTH, DEBT, AND TAXATION,
WASHINGTON, D.C., Feb. 28, 1880.

EDWARD ATKINSON, ESQ., *Boston, Mass.*

My dear Sir, — In reply to your question relating to the exhaustion of the wheat-lands of the Western States, I take pleasure in saying that the fact is, while the sturdy pioneers are pushing their way westward to the fertile lands of the new States and Territories, the farmers of the older Western States are putting more labor into their crops, and are bringing up the production. Lord Airlie, generally well informed on American matters, made the statement in the July number of "The Fortnightly Review," that no winter wheat is raised in Illinois, for "the obvious reason that American farmers, with few exceptions, have been living on their capital; they have taken crop after crop without manure, till the land has become exhausted." In Illinois, last year, no less than 42,000,000 bushels of winter wheat were produced, and only 3,375,800 bushels of spring wheat. The same authority, and also a writer in "The Edinburgh Review" for January, 1880, reiterate the old cry of exhausted lands, and quotes in support of it the figures from the United-States Agricultural Reports. I doubt if these distinguished writers would come to the same conclusions if they carefully examined the State Agricultural Reports of our wheat-growing States. In 1878 the Western States produced 332,729,460 bushels of wheat; and to these States we should look for the average yield, and not the total average of a vast continent. For example, South Carolina with an average yield per acre of five bushels, Mississippi with six, Georgia with seven, and Arkansas with six, are all added in, and yet the total wheat product of all these States was less than five million in 1878. The absurdity of adding these States in to bring down the average yield of wheat is too apparent to need further comment, and I will close by directing your attention to the summary of a table which I have taken considerable pains to compile. This table shows the comparative yield of bushels of wheat per acre in the forty counties of England, and in forty wheat-growing counties of Illinois, Michigan, and Minnesota. The result is as follows: —

	BUSHELS.
Forty counties in England (average yield per acre)	$29\frac{9}{10}$
Forty counties in Illinois (1879)	$25\frac{1}{8}$
Forty counties in Michigan (1877)	$20\frac{1}{4}$
Forty counties in Minnesota (1877)	19

I think this method of comparison safer than the one employed by the Agricultural Department, which, in fact, does not show what the average yield of wheat, in wheat-growing sections, is at all.

I have the honor to be, sir,

Your obedient servant,

ROBERT P. PORTER, *Special Agent.*

The following statements and additional tables, lately compiled by Mr. Henry V. Poor, will be of service in connection with previous statements.

Statement showing the Length, Earnings from Passengers, Earnings from Freight, and Total Earnings, of all the Railroads in the United States in actual operation in 1851.

States.	Miles of Railroad in operation.	Earnings from Passengers.	Earnings from Freight.	Total Earnings.
Maine	284	$365,746	$219,241	$584,987
New Hampshire	415	537,901	686,103	1,224,004
Vermont	378	362,375	519,100	881,475
Massachusetts	1,167	3,821,675	3,233,139	7,054,814
Rhode Island	50	128,043	79,205	207,248
Connecticut	253	1,308,704	853,948	2,162,652
New York	1,705	4,800,431	2,841,849	7,642,280
New Jersey	269	1,731,662	901,157	2,632,719
Pennsylvania	898	1,836,682	4,161,297	5,997,979
Delaware	16	135,129	2,157	137,286
Maryland	324	665,857	1,403,517	2,069,414
Virginia	441	466,033	489,594	955,627
North Carolina	249	330,609	316,609	647,218
South Carolina	241	333,576	667,141	1,000,717
Georgia	658	432,669	1,386,592	1,819,261
Alabama	88	91,272	82,312	173,604
Mississippi	60	60,000	60,000	120,000
Louisiana	50	70,000	70,000	140,000
Kentucky	93	97,412	134,972	232,384
Ohio	633	990,610	940,382	1,930,992
Indiana	86	109,589	245,047	354,636
Illinois	116	147,676	188,634	336,310
Michigan	357	550,583	710,168	1,260,751
Totals	8,876	19,274,254	20,192,104	39,466,358

The vast plains lying to the north-west of the Mississippi, almost wholly without navigable water-courses, are fast becoming the chief source of supply of wheat, not only for our own markets, but for those of Western Europe. The recent long-continued depression led great numbers of our people to seek new homes upon these distant lands, where labor employed in agriculture is more profitable the first year than ever after. For their products, the railroads, which keep pace with the movement of population, are the equivalents of a market. The general result is shown in the tonnage carried by our railroads,

which equalled, the past year, two hundred and fifty million tons, which, at an estimate of sixty dollars to the ton, had an aggregate value of fifteen billions, — a sum twelve times greater than the entire foreign commerce of the country. The progress and magnitude of our internal commerce is well illustrated by the following tabular statement of the number of tons of merchandise transported over our leading railroads for the past twelve years: —

Statement of Tonnage carried over the specified Railroads yearly, from 1868 to 1879 inclusive.

Name of Railroad.	Years.					
	1868.	1869.	1870.	1871.	1872.	1873.
Boston and Albany	1,319,059	1,613,940	1,837,378	2,209,332	2,732,907	2,884,520
New York Central and Hudson River	2,562,802	3,190,840	4,122,000	4,532,056	4,303,905	5,522,724
New York, Lake Erie, and Western	3,908,243	4,212,209	4,852,505	4,844,202	5,564,274	6,312,702
Pennsylvania	4,722,015	5,402,991	5,427,401	6,575,843	7,844,778	9,211,234
Delaware, Lackawanna, and Western	2,128,512	1,993,946	3,398,004	2,363,568	3,347,671	4,448,739
Philadelphia and Reading	5,016,416	5,999,312	6,682,025	8,745,263	9,574,406	10,729,395
Philadelphia, Wilmington, and Baltimore	281,418	320,198	331,493	348,210	449,780	500,023
Cleveland, Columbus, Cincinnati, and Indianapolis	628,356	825,465	935,840	1,177,657	1,444,354	1,680,588
Pittsburgh, Fort Wayne, and Chicago	1,509,052	1,659,701	1,740,584	2,047,114	2,408,162	2,316,568
Baltimore and Ohio*	308,600	299,873	286,835	435,202	557,609	640,265
Marietta and Cincinnati	318,865	388,067	392,445	528,395	667,267	734,897
Ohio and Mississippi	517,301	528,702	664,676	684,596	708,799	927,258
Lake Shore and Michigan Southern	1,604,655	1,759,201	2,078,725	3,784,525	4,443,092	5,176,661
Michigan Central	638,586	802,835	823,582	1,105,875	1,238,313	1,416,792
Chicago and Alton	915,682	1,076,878	1,261,032	1,501,496	1,601,799	1,642,443
Chicago, Rock Island, and Pacific	654,435	806,788	856,668	914,315	1,014,318	1,286,066
Chicago, Burlington, and Quincy	937,489	1,029,746	1,052,754	1,382,515	1,689,104	2,221,741
Chicago and North-western	1,082,429	2,211,826	2,222,978	2,208,190	2,520,016	2,958,390
Chicago, Milwaukee, and St. Paul	1,539,875	1,344,358	1,522,753	1,463,156	1,687,826	1,791,504

Name of Railroad.	Years.					
	1874.	1875.	1876.	1877.	1878.	1879.
Boston and Albany	2,608,403	2,439,472	2,541,274	2,601,657	2,642,555	2,738,096
New York Central and Hudson River	6,114,678	6,001,984	6,803,680	6,351,356	8,175,635	9,441,243
New York, Lake Erie, and Western	6,364,276	6,239,943	5,972,818	6,182,451	6,150,468	8,212,641
Pennsylvania	8,626,946	9,115,368	9,922,911	9,738,295	10,946,752	.....
Delaware, Lackawanna, and Western	3,653,763	3,898,344	2,923,039	2,922,803	3,193,531	4,668,000
Philadelphia and Reading	9,841,234	8,307,639	8,470,706	10,406,947	9,079,089	12,967,309
Philadelphia, Wilmington, and Baltimore	319,748	333,309	739,108	760,407	793,365	.....
Cleveland, Columbus, Cincinnati, and Indianapolis	1,531,952	1,611,174	1,745,367	1,624,200	1,949,480	.....
Pittsburgh, Fort Wayne, and Chicago	2,294,120	2,496,148	2,629,607	2,690,735	3,026,250	.....
Baltimore and Ohio*	752,256	872,101	1,093,393	1,047,645	1,149,499	1,425,629
Marietta and Cincinnati	759,586	744,678	718,986	740,779	716,627	.....
Ohio and Mississippi	931,465	992,137	1,184,254	1,091,654	1,113,221	.....
Lake Shore and Michigan Southern	5,221,267	5,022,490	5,635,167	5,513,398	6,098,445	7,542,548
Michigan Central	1,593,954	1,641,280	2,686,248	3,056,386	3,564,731	3,513,819
Chicago and Alton	1,421,153	1,545,892	1,818,235	1,560,181	1,967,306	.....
Chicago, Rock Island, and Pacific	1,399,383	1,717,627	1,640,000	1,651,409	1,768,118	2,236,270
Chicago, Burlington, and Quincy	2,420,628	2,396,933	2,892,614	3,249,625	3,975,010	5,400,000
Chicago and North-western	3,591,000	3,163,315	3,471,927	3,413,398	3,911,261	4,295,937
Chicago, Milwaukee, and St. Paul	1,735,535	1,832,527	1,765,801	1,687,057	1,955,699	2,500,000

* Through tonnage only.

Statement showing the Number of Miles of Railroad constructed each year, in the United States, from 1830 to 1879, inclusive.

Year.	Miles in operation.	Annual increase of mileage.	Year.	Miles in operation.	Annual increase of mileage.	Year.	Miles in operation.	Annual increase of mileage.
1830	23	...	1847	5,598	668	1864	33,908	738
1831	95	72	1848	5,996	398	1865	35,085	1,177
1832	229	134	1849	7,365	1,369	1866	36,827	1,742
1833	380	151	1850	9,021	1,656	1867	39,276	2,449
1834	633	253	1851	10,982	1,961	1868	42,255	2,979
1835	1,098	465	1852	12,908	1,926	1869	47,208	4,953
1836	1,273	175	1853	15,360	2,452	1870	52,898	5,690
1837	1,497	224	1854	16,720	1,360	1871	60,568	7,670
1838	1,913	416	1855	18,374	1,654	1872	66,735	6,167
1839	2,302	389	1856	22,016	3,647	1873	70,840	4,195
1840	2,818	516	1857	24,503	2,647	1874	72,741	2,058
1841	3,535	717	1858	26,968	2,465	1875	74,658	1,917
1842	4,026	491	1859	28,789	1,821	1876	76,808	2,712
1843	4,185	159	1860	30,635	1,846	1877	79,147	2,339
1844	4,377	192	1861	31,286	651	1878	81,841	2,694
1845	4,633	256	1862	32,120	834	1879	86,286	4,445
1846	4,930	297	1863	33,170	1,050			

The following statement will show the extraordinary increase, due to the extension of our railroads into the great grain-growing districts of the West, of the exports compared with the imports of the country for the past ten years: —

Statement showing the Imports and Exports of the United States for the past Ten Years.

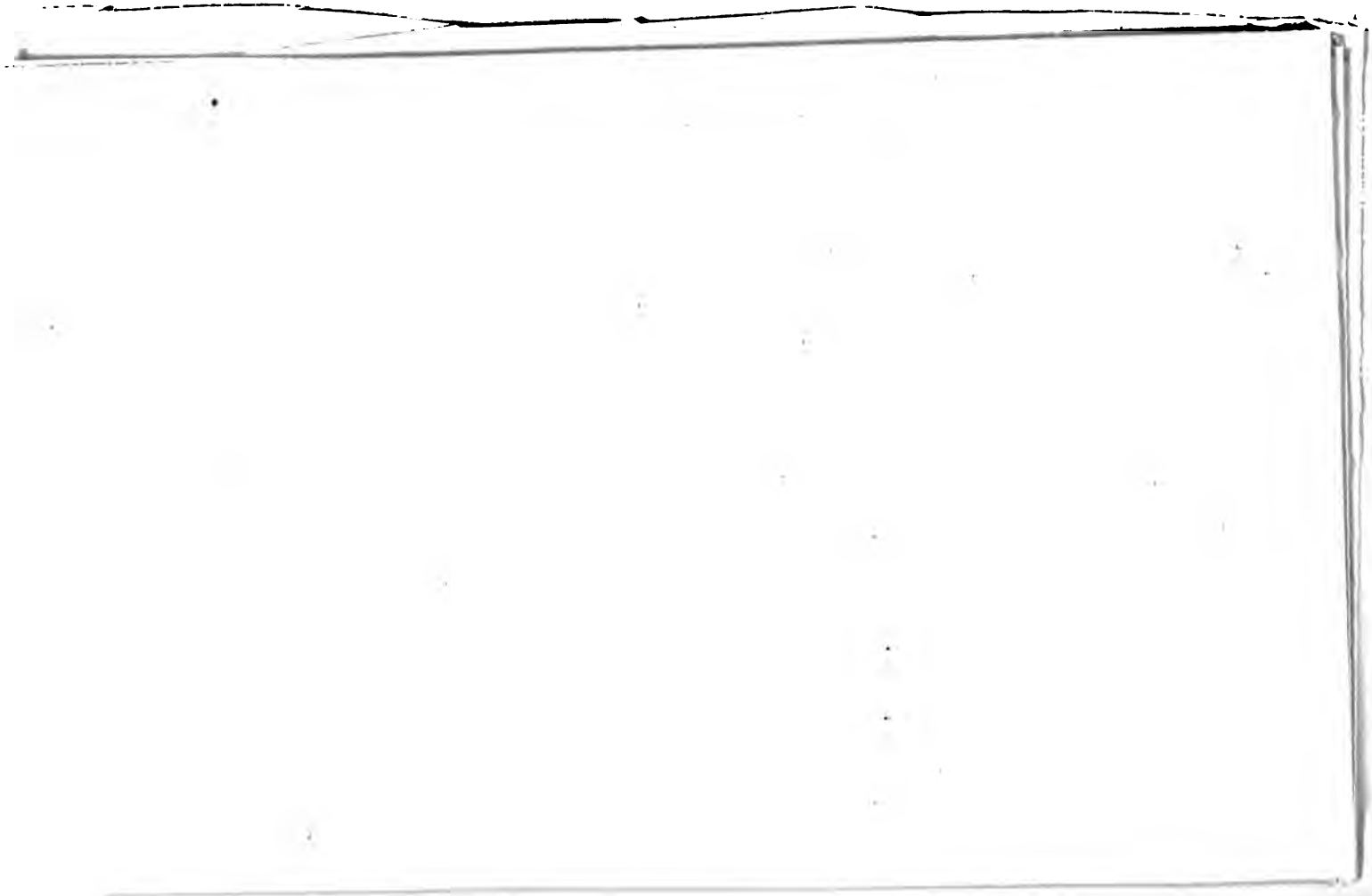
Year.	Imports.	Exports.
1870	$462,377,587	$420,500,275
1871	541,493,708	512,802,267
1872	640,338,766	501,285,371
1873	663,617,147	578,938,985
1874	595,861,248	639,333,166
1875	553,006,153	598,737,753
1876	476,677,871	591,217,532
1877	492,097,540	645,850,760
1878	466,872,846	722,811,815
1879	466,073,775	736,634,831

Of our exports breadstuffs made up the following quantities and values: —

Year.	Bushels.	Value.
1870	56,618,750	$70,997,846
1871	63,819,573	78,009,953
1872	75,809,033	83,006,974
1873	93,968,932	97,232,877
1874	130,493,088	159,530,078
1875	163,790,806	109,679,302
1876	128,026,829	129,026,960
1877	135,964,070	115,693,571
1878	191,210,928	178,257,262
1879	189,505,482	210,355,528

The preceding statements are for the fiscal years ending June 30. The Chief of the Bureau of Statistics, Mr. Nimmo, has obligingly furnished me with a statement of the exports of breadstuffs for the last half of 1879: these equalled 153,842,-269 bushels, having a value of $160,591,488; the greater part of this immense mass of food having been brought to tide-water by railroad from States lying to the west and north-west of Lake Michigan. Of breadstuffs the New-York Central alone, the past year, transported thirty-one hundred thousand tons, or one hundred million bushels.

It will be observed that our crop of maize, wheat, and rye in 1879 was a little over two billion bushels, of which a little less than ten per cent was exported, to wit, a hundred and ninety million bushels, valued at two hundred and ten million dollars; to which must be added the grain converted into beef and pork, the measure of which the writer cannot give.



The preceding statements are for the fiscal years ending

COMMERCIAL PROGRESS.

HOW IT HAS BEEN ADVANCED BY THE RAILROADS.

THE chart published herewith, entitled, "Progress of the Nation," was first prepared for use at a dinner of the Merchants' Club, at which the writer had been requested to speak upon the railway problem in its relation to the future commerce of Boston. As it proved to be interesting, it has been corrected in some minor details, and several tables have been added that are very good standards by which to gauge the progress of the nation.

It may perhaps be observed that what are called "hard times," such as existed from 1873 to 1879, may be in fact the very times of greatest progress. It is doubtless true that in this late period there was a great change in the fortunes of individuals; the country was then and is still suffering under the curse of bad money.

The irredeemable legal-tender note of the United States for fourteen of the fifteen years pictured in this chart was working its malignant fraud, taking from the laborer the fruits of his labor, and transferring wealth to those who had not earned it. Its subtle mischief is still working, even though the note is now nominally redeemable in coin; but national wealth will not be the true measure of national welfare until specie payment shall be absolutely resumed by the repeal of the legal-tender acts, under which United-States promises are re-issued long after all necessity for a forced loan has ceased.

The true lesson of these lines is, however, that the productive power of the nation is so immense that no obstructive statutes and no executive maladministration can wholly retard its progress. In respect to the railroad, it will be observed that the curve of the increase in the production of grain is almost coincident with the increase in the miles of railroad.

The great capitalists who control and extend these lines are the true communists; they reduce the cost of subsistence, and bring about equality in consumption. The quarter of a ton of grain and meat that constitutes the year's subsistence of an adult in Massachusetts is brought a thousand miles at the measure of one day's wages of a common laborer. If the railroad capitalist had not spent his life in doing this work, the grain might rot upon the field, or be burned for fuel, and the meat be left upon the prairie of Texas as it used to be when only the hide of the steer had any commercial value.

The cotton figures give another lesson. The number of laborers who work upon the cotton-fields of the South is believed to be less than it was before the war. This is not certain, but in all the wide correspondence of the writer this has been constantly asserted by Southern men. They attribute the increase of crops to the use of better tools, better methods of cultivation, the use of fertilizers, the substitution of mule labor for human labor, and to the beginning of methods of thrift and economy that are only consistent with liberty. If this be true, mark the result. The increase of fifteen years has been 9,630,344 bales. The fifteen years' crops of cotton have brought to the cultivators over $60 per bale, or about $3,500,000,000 in gold value, and the excess of production of free labor has been worth nearly or quite $600,000,000 in gold coin. The value of these fifteen crops of cotton at the factories or at the ports of shipment has been little, if any, less than $4,000,000,000 in gold. The money cost of the war to the people of the United States was a little over $4,000,000,000 in paper currency.

Cotton and corn are the two powers that overcome the vacillations of our legislators and the false measures of our administrations. Now that slavery is ended, it is not in the power of an incompetent Congress or an incapable administration to do much more than retard the material progress of this nation. Tampering with the currency was tolerated under the stress of war; but the greenback craze is about ended. The great danger now is the single silver standard, to which we are steadily tending, as each month's coinage of $2,000,000 adds to the dead weight that must, sooner or later, drive gold from use. But even this will be averted; the solid sense of the country is being aroused, and financial suicide will not be committed by this people.

Another fact is noticeable. At different times during these fifteen years many attempts at legislative interference with the railroads have been undertaken, all resulting in more or less obstruction to their progress and to their effective use. In the West especially, what were known as the Granger Acts were passed; and, although they have been sustained by a decision of a bare majority of the Supreme Court of the United States, they are already practically obsolete.

These acts are, like many other similar attempts at meddlesome legislation, of little effect except a temporary mischief. Grievances that may be real, but which come of necessity in the development of such immense undertakings as the railway system, are taken up by shallow reasoners, who rush to the legislature, and procure the enactment of a meddlesome statute, which if enforced would promote far worse evils than those which it seeks to remedy; but, as soon as the facts are apparent, the common sense of the community takes control, and the statute becomes obsolete if it is not repealed.

Such is the history of most of the legislation for the control of railroads, notwithstanding the fact that progress in jurisprudence has not kept pace with the progress of railways and of commerce. In the granger cases, and the Pacific Railroad cases, the Supreme Court of the United States appears to have held that railroad corporations possess no rights that the Supreme Court is bound to sustain, and that the nation or the States may impair their contracts with them without remedy on their part; yet, in spite of all these futile measures, the necessity of the service has carried them on to a cheapness of transportation that the craziest advocate of State supervision never dreamed of.

Another futile attempt is now being made in Congress to control the railroad system by the enactment of the inter-State commerce bill known as the Reagan Act. It is not likely to become a law, but, if it should, it would only add another element of confusion; and, even while it is being discussed, the true method is being devised and applied by the railroad corporations themselves in the adoption of the system of arbitration now in force. Under this system the noxious fluctuations and cutting of rates are being avoided, and the service is being performed upon the only conditions that can make it permanent: namely, at steady but moderate rates, which will

profit the producer, the consumer, and the common carrier alike.

The new conditions and new relations brought into existence by the railroad, the telegraph, the telephone, and the steamship, bring new legal questions into view that cannot be decided by the mere precedents of the past; and the time has come for great lawyers to review some of the decisions of the courts in the railroad cases and the legal-tender cases, in order that the danger of bad laws may be averted and that erroneous decisions may be reversed.

The discussion at the Merchants' Club, for which these tables were prepared, had special reference to the future commerce of Boston, in its connection with the railroad system of the country.

THE COMMERCE OF BOSTON.

The consideration of the facts developed in these tables will make it very apparent that the future development of Boston will depend upon five principal conditions, to wit: —

1. Such a change in the policy of the Boston and Albany Railroad as will result — as it has on the other sections of the line to Chicago, of which it forms a part — in a great increase of traffic and reduction of cost, with an increase of profit.
2. Such a reduction in the terminal expenses in Boston on through traffic as will more than compensate for the greater distance of Boston from Chicago as compared to New York.
3. The consolidation and more effective service of the Hoosac Tunnel lines, and their connection with adequate terminal grounds.
4. The increase of the traffic in cotton, and other Southern and Southwestern products, over the New York and New England, and other lines connecting with Southern railroads.
5. The connection of the Grand Trunk Railroad by way of the Boston and Maine Railroad, with adequate terminal grounds, by which means Boston will become its principal terminus.

In other words, what is now chiefly required is the consolidation of the termini of the several railroads entering Boston, in part at East Boston, and in part at South Boston, at which points only can an area of territory be found that will in any degree suffice for the work that may be done in the near future.

Up to this time the greater part of our through traffic has been over the Boston and Albany and the New York Central route; and, for the purpose of this consideration, a few facts

may be given in reference to the conditions of traffic on this line.

It will be observed that the charge per ton per mile on the Lake Shore and Michigan Southern Railroad was sixty-four hundredths of a cent in 1879; on the New York Central, seventy-nine hundredths; on the Pennsylvania Railroad, eighty-one hundredths. On the Lake Shore line the actual cost to the railroad company in 1879, of moving all descriptions of merchandise, was forty hundredths; on the Pennsylvania Railroad, forty-two hundredths; on the New York Central, fifty-four hundredths; on the Michigan Central, forty hundredths; on the Philadelphia and Erie, thirty-five hundredths; on the Erie, fifty-six hundredths. The cost of moving 38,000,000 tons of merchandise of all kinds, on all the railroads of New York State, in 1878, was sixty-nine hundredths of a cent per ton, per mile, and must have been less in 1879.

These figures include the terminal charges as well as the hauling. From these data it is safe to conclude that the actual cost of hauling all classes of merchandise on roads having a heavy traffic is not over half a cent per ton, per mile; and on grain, meat, cotton, and other fourth-class or special traffic, over long distances, it must be very much less. The statements of all the great lines that have increased their traffic prove conclusively that the cost diminishes as the traffic increases, and in proportion to the increase up to the full capacity of the line.

The disadvantage of Boston, as compared to New York, is fifty-eight miles greater distance from Albany over the Boston and Albany Railroad, or forty-one miles over the Tunnel line. At half a cent a ton per mile, our disadvantage is, therefore, to be measured at not over thirty cents per ton on all merchandise of all classes, and, on grain and meat, at not over twenty-five cents per ton. The grade of the Boston and Albany is heavier than on the Hudson River line. The Tunnel grade is also heavier, but in less degree. But it is fair to infer that if 38,000,000 tons of first, second, third, and fourth-class freight can be moved on all the lines in the State of New York, including the heavy grades of the Erie, and all the short lines and branches, and also including all terminal charges, at a cost of sixty-nine hundredths of a cent a ton, the through traffic of either of our Massachusetts lines can be profitably done at less than half a cent per ton.

At this rate there will be no need to seek for business. It will force its way here as soon as we provide room to discharge and to handle the freight. That is to say, if the Boston and Albany or the Tunnel lines are as effectively managed as the New York Central and Hudson River Railroad, and are operated upon the principle of doing the maximum of business at the minimum of cost, the absolute disadvantage under which they will be worked will not exceed three cents per barrel on flour, will be less than one cent a bushel on grain, and less than eight cents a bale on cotton.

But, if this work is done in connection with crowded and insufficient terminal grounds, a moderate traffic will be done at a disadvantage in point of distance, and a large traffic at a disadvantage for want of room at the terminus. In neither case can it be made to pay.

When it is considered that the traffic of all the railroads entering Boston can be brought to a terminus at South Boston, of sufficient area to make it an easy and simple matter to transfer merchandise from one line to another, and from any car to any warehouse or steamship, without truckage, and with but one handling; also that this area will be traversed by one of the principal business streets of the city, on which all the local traffic can be trucked a very short distance to reach its place of distribution, it needs no argument or further consideration to prove that the slight disadvantage in distance, measured at less than thirty cents a ton, can be overcome, and a large margin be left for additional profit.

It may, therefore, be affirmed that the future progress of Boston is not a question of position (except so far as our greater proximity to Europe gives us an advantage), but of the capacity of the managers of its railroads, and of the energy and capital of its merchants. For many years, in fact ever since the consolidation of the Western and Worcester Railroads, the opportunity has existed for a constant increase in the commerce of Boston; but more especially has this opportunity been within easy reach during the last seven years, since the railway panic of 1873. Since that date all the other sections of railroad constituting through lines in other States have increased their traffic two to five fold, and have decreased the cost of operating their lines one-half or more, with constant improvement in their financial condition. For what reason has

the management of the Boston and Albany Railroad been worked in the direction rather of a decrease than an increase of its traffic? Why do its directors welcome a snow-blockade further west, and consider the periods in which their through traffic is stopped or reduced as the periods of most profitable work? May not the answer be found in the fact that the charter of the road renders it liable to confiscation if its managers dare to work it so effectively as to increase its profits above ten per cent per annum? Under these circumstances, what reason has there been for any of the Massachusetts men who have constructed great lines in other States to interest themselves in the development of this short section of a couple of hundred miles, which is practically forbidden to do much more than a local business, lest it should be seized?

In other words, the prime law of railroad prosperity is to do the largest service at the least cost; to carry the greatest amount of produce at the lowest price; to follow the common law of trade, "Large sales at a small profit." The State has kept a continual threat over this road, that, if its managers work according to these rules, their property shall be taken from them.

The disadvantage of the Boston and Albany Railroad, as compared to the New York Central and Hudson River Railroad, is fifty-eight miles; measured in money, at not over thirty cents per ton. The people of the State, being dissatisfied with the doings of this corporation, have pierced the Hoosac mountain. In place of removing the restrictions upon the Boston and Albany Railroad, whereby it would have been enabled to do all the work, and might, if consolidated with the New York Central Railroad, have increased its traffic and decreased its charge as that road has done, the State has constructed the Hoosac Tunnel, and sunk the money of the tax-payers in the Hartford and Erie Railroad, the two together costing over $20,000,000, on which the annual interest only constitutes between four and five per cent of every tax-bill paid in the Commonwealth every year. May it not be hoped and expected that the practical measures suggested by several members of the House of Representatives last winter will soon prevail, viz., For the State to sell all its railroad property, and facilitate to the utmost the consolidation of the Western lines by the removal of all restrictions upon earnings?

One object of the present paper is to prove, in black and white, by evidence that cannot be refuted or gainsaid, that the system of State restriction on existing roads, and State competition in the construction of new roads, has utterly failed in producing results commensurate to the money expended, and has retarded rather than promoted the objects for which these State undertakings have been entered upon and continued.

Let the lines marking the progress in other States, where the owners of railroads have been free to earn fortunes for themselves, be contrasted with the lines marking the diminishing traffic of our own State, and no other proof may be needed.

It is not State restriction, or the competition of railroad with railroad, that controls the charge that any line may make for its service; but it is the competition of city with city, of product with product, and of all the railways with all the waterways of the country. Hence it is, that, with the consolidation of great lines, the charge for railway service is diminished as the cost is reduced, and has never been permanently increased. Wherever State control or ownership has been attempted, it has failed to promote cheap railway service. The history of the Tunnel and of the Hartford and Erie legislation, when fully written, will be marked not only by their utter failure in securing the objects aimed at, but by corruption and fraud, by the subornation of legislators, by the prostitution of the powers intrusted to the senators and representatives to private ends, and even in the very last session by the open surrender of the interests of the State to the supposed requirements of the private clients of legislators.

It has often been alleged that the interest of Massachusetts is in her manufactures, and will be but little affected by her export traffic. Is not this a very superficial view of the matter? The prosperity of the manufacturer depends mainly on that of the farmer, who is his chief customer; and that depends absolutely on the export of the excess of our farm products. In 1879 nearly ten per cent of our grain crop, over 190,000,000 bushels, valued at $210,000,000, was exported; the value of the meat, butter, cheese, and lard exported in the same year was over $110,000,000. It needs but little business knowledge to conceive what would be the effect upon our home trade if this foreign traffic were stopped or seriously checked. It is therefore apparent that there is no class that has a greater interest

in giving every facility for the export of farm products or in reducing the cost of the work, than the manufacturers of New England.

The increase of the commerce of Boston now depends, in large measure, upon the use that may be made of the South Boston flats; in less degree, upon the enlargement of the area of traffic at East Boston. Some additions are now being made at the latter point by the Boston and Albany Railroad, but, as compared to what is being done in New York and Baltimore, the new area must be measured in feet as compared to acres. No other city has one-half the opportunity that Boston possesses. As the cost of hauling merchandise has been and will be greatly reduced, the cost of handling at the terminus has become the main consideration, increasing rather than decreasing with the increase of traffic if the area of the terminus is not ample. In fact, the facilities given at the terminus control the choice of lines on the part of shippers in the West, more than any consideration of distance. The control of an adequate terminus carries with it the control of the traffic.

This is no new problem. The State has spent over $20,000,000 in unproductive railroad property; its citizens have sunk over $20,000,000 more in the Hartford and Erie and the lines that preceded it; the untold millions sunk in the Vermont Central, the Ogdensburg, and other Northern lines must carry the aggregate expenditure to over $60,000,000, used in the effort to promote traffic with the West; and yet, now that the traffic is forcing its way to Boston, steamships lie for days at anchor in the harbor for want of room to discharge and take in their cargoes; and the managers of other lines are advised not to send their vessels to this port, because there is no dock at which they can be received.

The measure of our disadvantage as compared to New York in distance is less than thirty cents per ton, three cents on a barrel of flour, one cent on a bushel of grain, eight cents on a bale of cotton. The measure of our advantage is one day's greater proximity to Europe, and our unused area, where all kinds of merchandise can be sent to their destination at the least cost of transfer.

For the last seven years the undersigned, acting on behalf of an association organized for the purpose of making surveys and promoting the construction of a junction railroad to the South

Boston flats, has been called upon to promote the legislation whereby it might be possible to construct such a road, and to make use of the flats as a general railway terminus, or clearing-yard for freight. One by one the legal obstacles have been removed, and, by the enactment of the bill presented to the last Legislature by the joint commission, consisting of the Railroad Commissioners and the Harbor and Land Commissioners, to whom the petition of the undersigned and his associates was referred, the legal obstacles to the consolidation of the railway service, and to the use of the lands, have been removed.

For the first time since the subject was first mooted, another advantage of Boston over other cities may now be said to consist of eight hundred acres of land and flats belonging mainly to the Commonwealth of Massachusetts, waiting for improvement and for use. The merchants of Boston must now meet these questions on which the future commerce of the city absolutely depends. Can they comprehend the terms and conditions necessary to overcome the disadvantage in distance, measured at less than one cent a bushel on grain? Can the railway managers bring their ideas or their imagination up to a standard of acres of yard-room where they now seem to consider square feet sufficient? Can the capital be found for the construction of a junction railroad that will call for a sum not exceeding at the maximum, three to five per cent upon the $60,000,000 already spent in the attempt to secure Western connections and traffic, without which additional sum the whole investment may prove to have been almost all wasted, but with which expenditure the Boston and Maine (and Grand Trunk line connected therewith), Boston and Lowell, Fitchburg, Woonsocket division of the New York and New England, Massachusetts Central, Boston and Albany, Boston and Providence, New York and New England main line, and Old Colony Railroads can be connected with South Boston by means of a junction railroad from the harbor front to the line of the Boston and Maine Railroad in Wilmington?

A single track can be laid on this line at less than $2,000,000, a double track at not over $3,000,000. Is our railroad service to become an effective unit, or to remain a disconnected system of petty lines, each one worked mainly for merely local traffic, and, of necessity, operated at the maximum of cost, because

under such circumstances each line can only do the minimum of service?

It was not to be expected that the railway service of Boston should be adequately planned at the beginning. In the lithograph of the station of the Western Railroad, printed in 1835 by Mr. P. P. F. Degrand, the passenger-trains are pictured at a platform on the outside of a small station-house such as would now be insufficient for a small country town; the freight-cars are covered with a white canvas like a market-wagon, and it was supposed that each one would be chartered by a special farmer. In the application for a charter for the Eastern Railroad, the gross receipts for freight "at Lynn are estimated at not less than $1,800 per year." When the tangle of railroad-tracks on the north side of the city was permitted, and the Providence grade-crossing established, few could conceive the development that was to come. But now there is no excuse; the future conditions can be imagined, and a fair degree of preparation can be made for them. This will be done if the citizens of Boston are endowed with what has been called in vernacular speech a "foresight equal to their hindsight."

The figures used in this statement have been taken in part from Poor's Railway Manual, or have been kindly furnished by its editor, and in part from an able argument before the railroad committee of Congress, by G. R. Blanchard of the Erie Railroad, and in part by Charles Worthington, statistician of the Department of Agriculture. I have named this chart "A Visible Speech;" but to him who can read between the lines there is in it a speech that is not visible, which only genius could clothe with words. Upon the bands of iron, of which these black lines are but the symbols, have been moved the peaceful weapons forged upon the grain-fields of the West, by means of which the power of the privileged classes of Great Britain, who would have broken this nation had they dared, is being shattered; and the workingmen who sustained the cause of liberty are being supported through years of hardship and adversity. The prices at which the railroad and the steamship enable us to land grain and meat in Great Britain forbid the payment of rent to the few landlords who control four-fifths of her soil.

The forces treated in this chart are powers that make for

righteousness, and assure peace, good-will, and plenty to the English-speaking people; and once more it may with truth be said, "The ships that pass between this land and that are like the shuttle of the loom, weaving the web of concord between the nations."

EDWARD ATKINSON.

BOSTON, May 22, 1880.

ACCOUNT OF A CALIFORNIA FARM.

The following account of one of the phases of the agriculture of this country may not be without interest to readers in the Eastern States. It is by one of the most competent and sagacious observers, who has lately visited this country from England.

[From "The Economist," London, March 6, 1880.]

To the Editor of The Economist.

Sir, — In California 160 acres is the largest arable farm that a settler can obtain without payment. But these settlers seldom remain longer than is necessary to bring the land under cultivation, when the farm may be sold at a profit. As a rule, farms in this country are from 320 to 1,000 acres, and the number of persons employed or occupied is, as a rule, one to each 160 acres. The writer had an opportunity of spending several days on the farm of Messrs. Hagan and Tevis, the well-known bankers and mine-owners of San Francisco. Here a gigantic experiment in irrigation has now proved successful. 300,000 acres of land are supplied with water, or will be supplied by next season. This farm is situated in the San Joaquin Valley, about 300 miles from San Francisco; and water is supplied by the river Kern, to which these owners have established their right for irrigation purposes. The natural rainfall of this district is only three inches per annum, a quantity quite insufficient for any crop. The Sierra Nevada and coast ranges, from which the water is derived, supply water as soon as the snow falls in November, and it continues to flow during the next six months. The water appears to be rich in sediment, — the decomposed granite of the mountains. About 150 miles of main irrigation-channels of from ten feet to thirty feet wide are now in operation. At present 25,000 acres are fenced in and under crops of one kind or another; a considerable proportion being alfalfa used for the cattle and horses. Fields vary from 100 to 300 acres, and are fenced at a cost of £125 per mile with red-wood posts and pine rails eight inches wide and one inch thick, with strong top rail. 50,000 sheep, 8,000 cattle, and 1,400 horses are now on the home farm. Trees are planted around all the fields, mostly cotton-wood and willow; the method of planting being simple and effectual, and consisting in placing natural posts from four inches to six inches

diameter round the fields. These grow rapidly along the line of the irrigation-ditches. All planting has been done in the last six years; and the trees, as a rule, are twenty feet to thirty feet high, and afford shade to cattle in every field.

Messrs. Hagan and Tevis have at present not sold any land, but are glad to admit tenants on liberal terms. The writer visited several tenants, mostly settled during the last eighteen months, and found them well satisfied with the profits. These tenants appear to have come without capital, and consequently depend entirely on the grain-crop. Messrs. Hagan and Tevis build the ranche at cost price, and necessary barn, and supply farming implements on the same terms. Good water, obtained by boring from three hundred to four hundred feet, rises to within thirty feet of the surface at the highest points, and above the surface on the greater part of the estate. Each of the ranches which the writer saw was supplied with good cool water by an artesian well made at Messrs. Hagan and Tevis's expense. The tenants were principally Italians, one and up to as many as nine joining together to take a farm. The rent is one-fourth of the produce, paid in kind, and the landlords reserve the right of pasturage on the stubbles. This is a benefit to a poor tenant who does not own stock, as the cattle and sheep keep down weeds and natural grasses. The greater part of the 25,000 acres under cultivation is farmed by the owners. The wheat-crop has averaged over 25 bushels to the acre. On one field of 150 acres 91 bushels of barley to the acre was reaped. The alfalfa is wonderfully productive: that sown in 1874 is still growing, — a thick, luxuriant crop. One field of 300 acres produced this year 12 tons of hay to the acre. The crop of alfalfa is cut once or twice in the year, or cattle are turned in to graze. After the first crop, I saw 1,000 calves in a field of 80 acres, and was told that the alfalfa supported during the winter season from 8 to 10 cattle per acre, 30 sheep, or 40 hogs. After the crop is cut, it is stacked in long low stacks across the centre of the field; the cattle are allowed to eat away the lower sides of the stacks until a considerable recess has been formed, when a railing is fixed round the stack, and a man rakes down occasionally sufficient hay to fill the space between the railing and the under-cut stack. The effect of irrigation on the land is very apparent. In those parts of the country not supplied with water, the soil is a loose sand, and supports no vegetation except occasionally sage-brush and filaree grass. After the water has had access to this desert for a season, a loamy covering is formed; and after four years the whole soil, as far as the plough reaches, appears a dark friable loam. The soil brought down by the river Kern appears to be sufficient to grow a crop each year, instead of reducing the farmer to the necessity of exhausting his soil with con-

tinuous grain-crops. It has been stated that continuous grain-crops without irrigation or manure do not injure the soil; but it is an established fact that the wheat grown in California under continuous cropping has deteriorated very seriously in quality, and as a matter of common sense it appears impossible for the same soil to support heavy crops without exhausting its fertility. The climate of the St. Joaquin Valley is pleasant during the winter, snow being almost unknown, though frosts occur during the nights. The summer is very hot, and the settlers in the irrigated districts will probably be, to some extent, liable to ague; as far as the writer observed, the inhabitants in this district appeared healthy. The harvest is gathered between June and October. Machines to head, thresh, and sack the wheat at one operation are used. The straw left standing is burnt or ploughed into the land during the succeeding winter. The irrigation-water decomposes the stubble ploughed into the ground, and forms a natural manure. The writer saw on most of the ploughed land a sufficient crop of wheat growing from the seed shaken out during harvest; in several cases the "volunteer crop," as it is called, was too thick, and had to be harrowed out. It was stated that only one-fifth of the land required to be sown, the natural growth covering four-fifths of the ground.

The irrigation-water is either supplied to the fields by ditches, from one-quarter to half a mile apart, or by surface irrigation by means of a check. In the former case the water filters through the porous subsoil, and is retained by one of the numerous beds of clay underlying the surface. In the latter case, a check or bank, equal in height to the highest point of the field, is thrown up along the lowest parts of the field. The water is admitted over the whole field for as long a time as necessary.

As the main ditches are forced to follow ridges of sand forming the highest parts of the fields, great loss of water occurs until the ditches become puddled to some extent; and for this reason irrigation by means of a check enables a great length of ditch to be dispensed with. At the same time, less labor is necessary in repairs before the water is run on to the ground.

Messrs. Hagan and Tevis's manager, Dr. Thornton, who gave me every facility for seeing the farm, estimates the cost of a two-storied house, and barn sixty feet by fifty, at from $2,300 to $3,000; and considers that $4,000, or £800 sterling, would be sufficient capital for a farmer to start a farm of 1,000 acres. Payment for the land by instalments, one quarter of the value being paid at once, the remainder in three equal yearly sums, are stated to be the usual terms. The value of irrigated land is estimated at from 2 pounds to 6 pounds per acre; original cost, 9 shillings per acre. Wages of farm-laborers, $40 to

$45 per month, including board, equal to 5 shillings to 6 shillings *per diem* with board. A large number of Chinese are employed, as they stand the summer heat better than white men.

These few facts and observations show that the investment of capital in irrigation-works is going on in California under conditions not unlike those of India; and some day our capitalists and investors may prefer to invest money in productive enterprise of this kind instead of in worthless foreign stocks and repudiated bonds.

Yours truly,

J. J. TYLOR.